



ReactIR™ Spectroscopy Citation List

Table of Contents

A collection of peer-reviewed journal articles from industry and academia, published from 2020 to May 2023, utilizing in-situ ReactIR FTIR spectroscopy for the advancement of scientific research.

METTLER TOLEDO

Automation

- Abolhasani, M., & Kumacheva, E. (2023). The rise of self-driving labs in chemical and materials sciences. *Nature Synthesis*, 2(6), 483–492.
<https://doi.org/10.1038/s44160-022-00231-0>
- Davies, J. C., Pattison, D., & Hirst, J. D. (2023). Machine learning for yield prediction for chemical reactions using in situ sensors. *Journal of Molecular Graphics and Modelling*, 118, 108356.
<https://doi.org/10.1016/j.jmgm.2022.108356>
- McMullen, J. P., & Wyvatt, B. M. (2023). Automated optimization under dynamic flow conditions. *Royal Society of Chemistry*, 8(1), 137–151.
<https://doi.org/10.1039/d2re00256f>
- Liu, J., Sato, Y., Yang, F., Kukor, A. J., & Hein, J. E. (2022). An Adaptive Auto-Synthesizer using Online PAT Feedback to Flexibly Perform a Multistep Reaction. *Chemistry Methods*, 2(8).
<https://doi.org/10.1002/cmtd.202200009>
- Sacher, S., Castillo, I., Rehrl, J., Sagmeister, P., Lebl, R., Kruisz, J., Celikovic, S., Sipek, M., Williams, J. D., Kirschneck, D., Kappe, C. O., & Horn, M. (2022). Automated and continuous synthesis of drug substances. *Chemical Engineering Research & Design*, 177, 493–501.
<https://doi.org/10.1016/j.cherd.2021.10.034>
- Sagmeister, P., Ort, F. F., Jusner, C. E., Hebrault, D., Tampone, T., Buono, F. G., Williams, J. D., & Kappe, C. O. (2022). Autonomous Multi-Step and Multi-Objective Optimization Facilitated by Real-Time Process Analytics. *Advanced Science*, 9(10), 2105547. <https://doi.org/10.1002/advs.202105547>
- Christensen, M., Yunker, L. P. E., Shiri, P., Zepel, T., Prieto, P. C., Grunert, S., Bork, F., & Hein, J. E. (2021). Automation isn't automatic. *Chemical Science*, 12(47), 15473–15490. <https://doi.org/10.1039/d1sc04588a>
- Shiri, P., Lai, V. K. W., Zepel, T., Griffin, D. C., Reifman, J., Clark, S., Grunert, S., Yunker, L. P. E., Steiner, S., Situ, H., Yang, F., Prieto, P. C., & Hein, J. E. (2021). Automated solubility screening platform using computer vision. *iScience*, 24(3), 102176. <https://doi.org/10.1016/j.isci.2021.102176>
- Grover, M. A., Griffin, D., Tang, X., Kim, Y. J., & Rousseau, R. (2020). Optimal feedback control of batch self-assembly processes using dynamic programming. *Journal of Process Control*, 88, 32–42.
<https://doi.org/10.1016/j.jprocont.2020.01.013>

Bio

- Aliyu, A., Lee, J., & Harvey, A. (2023). Microalgae for biofuel: Isothermal pyrolysis of a fresh and a marine microalga with mass and energy assessment. *Chemical Engineering Journal Advances*, 14, 100474. <https://doi.org/10.1016/j.ceja.2023.100474>
- Hengelbrock, A., Schmidt, A., Helgers, H., Vetter, F. L., & Strube, J. (2023). Scalable mRNA Machine for Regulatory Approval of Variable Scale between 1000 Clinical Doses to 10 Million Manufacturing Scale Doses. *Processes*, 11(3), 745. <https://doi.org/10.3390/pr11030745>
- Liu, Y., Lin, F., Zhang, T., Wu, C., Liu, W., Wang, H., Xiao, C., & Chen, X. (2023). Toxic aldehyde-scavenging polypeptides mitigate secondary injury after spinal cord injury. *Science China Materials*. <https://doi.org/10.1007/s40843-022-2409-4>
- Zhao, Y., Tang, Y., Wasalathanthri, D. P., Xu, J., & Ding, J. (2023). An adaptive modeling approach using spiking-augmentation method to improve chemometric model performance in bioprocess monitoring. *Biotechnology Progress*. <https://doi.org/10.1002/btpr.3349>
- Lomont, J. P., Ralbovsky, N. M., Guza, C., Saha-Shah, A., Burzynski, J., Konietzko, J., Wang, S., McHugh, P. C., Mangion, I., & Smith, J. A. (2022). Process monitoring of polysaccharide deketalization for vaccine bioconjugation development using in situ analytical methodology. *Journal of Pharmaceutical and Biomedical Analysis*, 209, 114533. <https://doi.org/10.1016/j.jpba.2021.114533>
- Reyes, S. C., Durocher, Y., Pham, P., & Henry, O. (2022). Modern Sensor Tools and Techniques for Monitoring, Controlling, and Improving Cell Culture Processes. *Processes*, 10(2), 189. <https://doi.org/10.3390/pr10020189>
- Santos, M. C. S., Rodrigues, K. C., Veloso, I. I. K., Badino, A. C., & Cruz, A. a. V. E. (2022). Real-Time Monitoring of Ethanol Fermentation Using Mid-Infrared Spectroscopy Analysis of the Gas Phase. *Industrial & Engineering Chemistry Research*. <https://doi.org/10.1021/acs.iecr.2c00325>
- Siegl, M., Brunner, V., Geier, D., & Becker, T. (2022). Ensemble-based adaptive soft sensor for fault-tolerant biomass monitoring. *Engineering in Life Sciences*, 22(3–4), 229–241. <https://doi.org/10.1002/elsc.202100091>
- Doppler, P., Gasser, C., Kriegbaum, R., Ferizi, A., & Spadiut, O. (2021). In Situ Quantification of Polyhydroxybutyrate in Photobioreactor Cultivations of *Synechocystis* sp. Using an Ultrasound-Enhanced ATR-FTIR Spectroscopy Probe. *Bioengineering*, 8(9), 129. <https://doi.org/10.3390/bioengineering8090129>

Bio

- Duprez, J., Kalbfleisch, K., Deshmukh, S. S., Payne, J. R., Haer, M., Williams, W. W., Durowoju, I., & Kirkitadze, M. (2021). Structure and compositional analysis of aluminum oxyhydroxide adsorbed pertussis vaccine. *Computational and Structural Biotechnology Journal*, 19, 439–447. <https://doi.org/10.1016/j.csbj.2020.12.023>
- Haer, M., Strahlendorf, K., Payne, J. R., Jung, R., Xiao, E., Mirabel, C., Rahman, N., Kowal, P., Gemmiti, G., Cronin, J. T., Gable, T., Park-Lee, K., Drolet-Vives, K., Balmer, M., & Kirkitadze, M. (2021). PAT solutions to monitor adsorption of Tetanus Toxoid with aluminum adjuvants. *Journal of Pharmaceutical and Biomedical Analysis*, 198, 114013. <https://doi.org/10.1016/j.jpba.2021.114013>
- Kaczmarek, D. K., Rzemieniecki, T., Gwiazdowska, D., Kleiber, T., Praczyk, T., & Pernak, J. (2021). Choline-based ionic liquids as adjuvants in pesticide formulation. *Journal of Molecular Liquids*, 327, 114792. <https://doi.org/10.1016/j.molliq.2020.114792>
- Kakde, B. N., Capota, E., Kohler, J. J., & Tambar, U. K. (2021). Synthesis of Cell-Permeable N-Acetylhexosamine 1-Phosphates. *The Journal of Organic Chemistry*, 86(24), 18257–18264. <https://doi.org/10.1021/acs.joc.1c01781>
- Kastenhofer, J., Libiseller-Egger, J., Rajamanickam, V., & Spadiut, O. (2021). Monitoring *E. coli* Cell Integrity by ATR-FTIR Spectroscopy and Chemometrics: Opportunities and Caveats. *Processes*, 9(3), 422. <https://doi.org/10.3390/pr9030422>
- Khalili, K. N. M., Peinder, P., Bruijnincx, P. C. A., & Weckhuysen, B. M. (2021). Monitoring Aqueous Phase Reactions by Operando ATR-IR Spectroscopy at High Temperature and Pressure: A Biomass Conversion Showcase. *Chemistry Methods*. <https://doi.org/10.1002/cmtd.202100041>
- Laraman, F. J., Fisk, H., Whittaker, D., Cherryman, J. H., & Diorazio, L. J. (2021). Investigating the Activation Kinetics of Phosphoramidites for Oligonucleotide Synthesis. *Organic Process Research & Development*, 26(3), 764–772. <https://doi.org/10.1021/acs.oprd.1c00195>
- Lee, S. Y., Choi, H., Lee, G., Choi, Y., Lee, H., Kim, G., Lee, H., Lee, W., Park, J., & Yoon, D. S. (2021). Conformation Control of Amyloid Filaments by Repeated Thermal Perturbation. *ACS Macro Letters*, 10(12), 1549–1554. <https://doi.org/10.1021/acsmacrolett.1c00525>

Bio

- Payne, J. R., Cronin, J. T., Haer, M., Krouse, J., Prosperi, W., Drolet-Vives, K., Lieve, M., Soika, M., Balmer, M., & Kirkitadze, M. (2021). In-line monitoring of surfactant clearance in viral vaccine downstream processing. *Computational and Structural Biotechnology Journal*, 19, 1829–1837.
<https://doi.org/10.1016/j.csbj.2021.03.030>
- Clososki, G. C., Soldi, R. A., Da Silva, R. F., Guaratini, T., Lopes, J. M., Pereira, P. F. M., Lopes, J. T., Santos, T. V. D., Martins, R. B., Costa, C., De Carvalho, A. T., daSilva, L. L. P., Arruda, E., & Lopes, N. P. (2020). Tenofovir Disoproxil Fumarate: New Chemical Developments and Encouraging in vitro Biological Results for SARS-CoV-2. *Journal of the Brazilian Chemical Society*.
<https://doi.org/10.21577/0103-5053.20200106>
- Du, F., Zhou, Q., Sun, W., Yang, C., Wu, C., Wang, L., & Chen, G. (2020). 5-Hydroxyindole-Based EZH2 Inhibitors Assembled via TCCA-Catalyzed Condensation and Nenitzescu Reactions. *Molecules*, 25(9), 2059.
<https://doi.org/10.3390/molecules25092059>
- Li, Z., Luo, Y., Wang, X., Jiang, Z., Xu, S., & Hu, C. (2020). The effect of sodium chloride concentration on the mutarotation and structure of d-xylose in water: Experimental and theoretical investigation. *Carbohydrate Research*, 489, 107941. <https://doi.org/10.1016/j.carres.2020.107941>
- Morgan, B. P., Caille, S., & Walker, S. W. (2020). Discovery and Development of Omecamtiv Mecarbil: A Novel Cardiac Myosin Activator for the Potential Treatment of Systolic Heart Failure. In *Acs Symposium Series* (pp. 99–126). American Chemical Society.
<https://doi.org/10.1021/bk-2020-1369.ch003>
- Svatunek, D., Eilenberger, G., Denk, C., Lumpi, D., Hametner, C., Allmaier, G., & Mikula, H. (2020). Live Monitoring of Strain-Promoted Azide Alkyne Cycloadditions in Complex Reaction Environments by Inline ATR-IR Spectroscopy. *Chemistry: A European Journal*, 26(44), 9851–9854.
<https://doi.org/10.1002/chem.201905478>
- Veloso, I. I. K., Rodrigues, K. C., Ribeiro, M. L., Cruz, A. a. V. E., & Badino, A. C. (2020). Temperature Influence in Real-Time Monitoring of Fed-Batch Ethanol Fermentation by Mid-Infrared Spectroscopy. *Industrial & Engineering Chemistry Research*, 59(41), 18425–18433.
<https://doi.org/10.1021/acs.iecr.0c03717>

Bio

- Wasalathanthri, D. P., Rehmann, M. S., Song, Y., Gu, Y., Mi, L., Shao, C., Chemmalil, L., Lee, J., Ghose, S., Borys, M. C., Ding, J., & Li, Z. (2020). Technology outlook for real-time quality attribute and process parameter monitoring in biopharmaceutical development—A review. *Biotechnology and Bioengineering*, 117(10), 3182–3198. <https://doi.org/10.1002/bit.27461>
- Xu, F., & McCauley, J. W. (2020). Discovery and Chemical Development of Grazoprevir: An HCV NS3/4a Protease Inhibitor for the Treatment of the Hepatitis C Virus Infection. In *Acs Symposium Series* (pp. 285–312). American Chemical Society. <https://doi.org/10.1021/bk-2020-1369.ch009>

Catalysis

- Blacquiere, J. M., Stubbs, J. M., Nanuwa, A. S., & Hoffman, M. D. (2023). Catalyst Comparison for Additive-Free Acceptorless Dehydrogenation of Indoline Derivatives. *Synlett*, 34(05), 445–450.
<https://doi.org/10.1055/s-0042-1751417>
- Essman, J., Sharma, H., & Jacobsen, E. (2023). Development of Enantioselective Lithium-Isothiourea-Boronate–Catalyzed Matteson Homologations. *Synlett*. <https://doi.org/10.1055/a-2099-6557>
- Farina, V. (2023). How to Develop Organometallic Catalytic Reactions in the Pharmaceutical Industry. *Organic Process Research & Development*, 27(5), 831–846. <https://doi.org/10.1021/acs.oprd.3c00086>
- Gerlach, M., Jameel, F., Seidel-Morgenstern, A., Stein, M., & Hamel, C. (2023). Operando characterization of rhodium catalyst degradation in hydroformylation. *Catalysis Science & Technology*, 13(6), 1788–1801.
<https://doi.org/10.1039/d2cy01807a>
- Huang, D., An, Q., Wang, L., Li, T., Liu, M., & Wu, Y. (2023). Multi-active sites in situ formed on Schiff-base Pd(II)/Cu(II) self-assembly monolayer supported on graphene oxide: A simple protocol to enhance the catalytic activity. *Molecular Catalysis*, 535, 112846.
<https://doi.org/10.1016/j.mcat.2022.112846>
- Lu, C., Zhang, Y., Zhu, X., Yang, G., & Wu, G. (2023). Simultaneous Activation of Carbon Dioxide and Epoxides to Produce Cyclic Carbonates by Cross-linked Epoxy Resin Organocatalysts. *Chemcatchem*, 15(10).
<https://doi.org/10.1002/cctc.202300360>
- Rezazadeh, S., Martin, M. I., Kim, R. S., Yap, G. P. A., Rosenthal, J., & Watson, D. A. (2023). Photoredox-Nickel Dual-Catalyzed C-Alkylation of Secondary Nitroalkanes: Access to Sterically Hindered Δ -Tertiary Amines. *Journal of the American Chemical Society*, 145(8), 4707–4715.
<https://doi.org/10.1021/jacs.2c13174>
- Shi, J., Cui, Y., Sun, H., Wang, H., Liu, C., Xue, X., Li, C., Geng, L., Liu, J., & Jia, M. (2023). N-doped porous carbon-anchored zinc single-atom as an efficient and robust heterogeneous catalyst for glycerol carbonylation with urea. *Chemical Engineering Journal*, 466, 143317.
<https://doi.org/10.1016/j.cej.2023.143317>

Catalysis

- Sun, X., Liu, J., Ren, R., Yang, B., Li, T., Liu, M., & Wu, Y. (2023). Fabrication and catalytic performance of a new diaminopyridine Pd(II) monolayer supported on graphene oxide for catalyzing Suzuki coupling reaction. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 659, 130758. <https://doi.org/10.1016/j.colsurfa.2022.130758>
- Xiong, C., Xue, C., Yu, X., He, Y., Liang, Y., Zhou, X., & Ji, H. (2023). Tuning the olefin-VOCs epoxidation performance of ceria by mechanochemical loading of coinage metal. *Journal of Hazardous Materials*, 441, 129888. <https://doi.org/10.1016/j.jhazmat.2022.129888>
- Ball-Jones, N. R., Cobo, A. A., Armstrong, B. A., Wigman, B., Fettinger, J. C., Hein, J. E., & Franz, A. K. (2022). Ligand-Accelerated Catalysis in Scandium(III)-Catalyzed Asymmetric Spiroannulation Reactions. *ACS Catalysis*, 3524–3533. <https://doi.org/10.1021/acscatal.1c05768>
- Chen, Q., Ni, Y., Liang, J., Ni, L., Jiang, J., Pan, Y., & Wang, Q. (2022). Effects of the feeding procedure on the thermal behaviors of autocatalytic esterifications in semibatch processes. *Journal of Loss Prevention in the Process Industries*, 74, 104651. <https://doi.org/10.1016/j.jlp.2021.104651>
- Davies, A. M., Farris, B. M., Stephenson, C. R. J., & Szymczak, N. K. (2022). Enhancing Ru-Catalyzed Guerbet Reactivity for Biofuel Production from Ethanol. *ChemRxiv*. <https://doi.org/10.26434/chemrxiv-2022-9tjx4>
- He, L., Yang, J., Song, T., Liu, Y., & Lu, X. (2022). Carbonylative Ring Expansion of Epoxides to β -Lactones Using Inorganic Salt as Catalytic Species Precursor. *European Journal of Inorganic Chemistry*, 2022(35). <https://doi.org/10.1002/ejic.202200496>
- Hui, X., Wang, L., Cao, Y., Xu, S., He, P., & Li, H. (2022). Highly efficient synthesis of novel bio-based pentamethylene dicarbamate via carbonylation of pentanediamine with ethyl carbamate over well-defined titanium oxide catalysts. *Catalysis Science & Technology*. <https://doi.org/10.1039/d2cy00073c>
- Hutchinson, G., Alamillo-Ferrer, C., Fernández-Pascual, M., & Burés, J. (2022). Organocatalytic Enantioselective α -Bromination of Aldehydes with N-Bromosuccinimide. *Journal of Organic Chemistry*, 87(12), 7968–7974. <https://doi.org/10.1021/acs.joc.2c00600>

Catalysis

- Kohnke, K., Wessel, N., Esteban, J., Jin, J., Leitner, W., & Vorholt, A. J. (2022). Operando monitoring of mechanisms and deactivation of molecular catalysts. *Green Chemistry*, 24(5), 1951–1972.
<https://doi.org/10.1039/d1gc04383h>
- Lagerspets, E., Abba, D., Sharratt, J., Eronen, A., & Repo, T. (2022). Water tolerant base free Copper (I) catalyst for the selective aerobic oxidation of primary alcohols. *Molecular Catalysis*, 520, 112167.
<https://doi.org/10.1016/j.mcat.2022.112167>
- Li, Z., Song, E., Ren, R., Zhao, W., Li, T., Liu, M., & Wu, Y. (2022). Pd–Pd/PdO as active sites on intercalated graphene oxide modified by diaminobenzene: fabrication, catalysis properties, synergistic effects, and catalytic mechanism. *RSC Advances*, 12(14), 8600–8610.
<https://doi.org/10.1039/d2ra00658h>
- Li, Z., Zhang, Y., Zheng, Y., Li, B., & Wu, G. (2022). Insights into Thiourea-Based Bifunctional Catalysts for Efficient Conversion of CO₂ to Cyclic Carbonates. *Journal of Organic Chemistry*, 87(5), 3145–3155.
<https://doi.org/10.1021/acs.joc.1c02888>
- Mao, H., Fu, H., Liu, J., & Zhao, Y. (2022). Cycloaddition of carbon dioxide and epoxides over Fe-PYPA: Synthetic optimization and mechanistic study. *Journal of Environmental Chemical Engineering*, 10(6), 108629.
<https://doi.org/10.1016/j.jece.2022.108629>
- Morgan, P. M., Saunders, G., MacGregor, S., Marr, A. C., & Licence, P. (2022). Nucleophilic Fluorination Catalyzed by a Cyclometallated Rhodium Complex. *Organometallics*, 41(7), 883–891.
<https://doi.org/10.1021/acs.organomet.2c00052>
- Vanoye, L., & Favre-Réguillon, A. (2022). Mechanistic Insights into the Aerobic Oxidation of Aldehydes: Evidence of Multiple Reaction Pathways during the Liquid Phase Oxidation of 2-Ethylhexanal. *Organic Process Research & Development*, 26(2), 335–346.
<https://doi.org/10.1021/acs.oprd.1c00399>
- Wei, B., Sharland, J. C., Blackmond, D. G., Musaev, D. G., & Davies, H. M. L. (2022). In Situ Kinetic Studies of Rh(II)-Catalyzed C–H Functionalization to Achieve High Catalyst Turnover Numbers. *ACS Catalysis*, 12(21), 13400–13410. <https://doi.org/10.1021/acscatal.2c04115>

Catalysis

- Xia, Y., He, S., Bao, J., Hirao, H., Yiu, S., & Chan, M. C. W. (2022). Cooperativity in Shape-Persistent Bis-(Zn-salphen) Catalysts for Efficient Cyclic Carbonate Synthesis under Mild Conditions. *Inorganic Chemistry*, 61(48), 19543–19551. <https://doi.org/10.1021/acs.inorgchem.2c03480>
- Zaranek, M., & Robaszkiewicz, J. (2022). Acceleration of alkyne metathesis in multicomponent catalytic systems by use of alternative Mo(0) sources under optimised conditions. *Catalysis Communications*, 106410. <https://doi.org/10.1016/j.catcom.2022.106410>
- Zhu, S., Li, Z., Ren, R., Zhao, W., Li, T., Liu, M., & Wu, Y. (2022). Pd/Cu₂O/CuO as Active Sites on the Cyclometalated Pd(II)/Cu(II) Nanosheet: Active Centre Formation, Synergistic and Catalytic Mechanism. *ChemistrySelect*, 7(30). <https://doi.org/10.1002/slct.202200340>
- An, Q., Wang, L., Bi, S., Zhao, W., Wei, D., Li, T., Liu, M., & Wu, Y. (2021). Sandwich structured aryl-diimine Pd (II)/Co (II) monolayer—Fabrication, catalytic performance, synergistic effect and mechanism investigation. *Molecular Catalysis*, 501, 111359. <https://doi.org/10.1016/j.mcat.2020.111359>
- Baalbaki, H. A., Roshandel, H., Hein, J. E., & Mehrkhodavandi, P. (2021). Conversion of dilute CO₂ to cyclic carbonates at sub-atmospheric pressures by a simple indium catalyst. *Catalysis Science & Technology*, 11(6), 2119–2129. <https://doi.org/10.1039/d0cy02028a>
- Büker, J., Huang, X., Bitzer, J., Kleist, W., Muhler, M., & Peng, B. (2021). Synthesis of Cu Single Atoms Supported on Mesoporous Graphitic Carbon Nitride and Their Application in Liquid-Phase Aerobic Oxidation of Cyclohexene. *ACS Catalysis*, 11(13), 7863–7875. <https://doi.org/10.1021/acscatal.1c01468>
- Calleri, E., Temporini, C., Colombo, R., Tengattini, S., Rinaldi, F., Brusotti, G., Furlanetto, S., & Massolini, G. (2021). Analytical settings for in-flow biocatalytic reaction monitoring. *Trends in Analytical Chemistry*, 143, 116348. <https://doi.org/10.1016/j.trac.2021.116348>
- Chen, W., Cheng, Y., Zhang, T., Mu, Y., Jia, W., & Liu, G. (2021). Ni/AntPhos-Catalyzed Stereoselective Asymmetric Intramolecular Reductive Coupling of N-1,6-Alkynes. *Journal of Organic Chemistry*, 86(7), 5166–5182. <https://doi.org/10.1021/acs.joc.1c00079>

Catalysis

- Fu, H., Huang, K., Yang, G., Yu, H., Wang, H., Yu, H., Cai, X., Gao, H., & Liao, Y. (2021). Understanding the Catalytic Sites in Porous Hexagonal Boron Nitride for the Epoxidation of Styrene. *ACS Catalysis*, 11(14), 8872–8880.
<https://doi.org/10.1021/acscatal.1c02171>
- Guillet, S., Pisanò, G., Chakrabortty, S., Müller, B. W., De Vries, J. G., Kamer, P. C. J., Cazin, C. S. J., & Nolan, S. P. (2021). A Simple Synthetic Route to [Rh(acac)(CO)(NHC)] Complexes: Ligand Property Diagnostic Tools and Precatalysts. *European Journal of Inorganic Chemistry*.
<https://doi.org/10.1002/ejic.202100479>
- Khodeir, M., Jia, H., Vlad, A., & Gohy, J. (2021). Application of Redox-Responsive Hydrogels Based on 2,2,6,6-Tetramethyl-1-Piperidinyloxy Methacrylate and Oligo(Ethyleneglycol) Methacrylate in Controlled Release and Catalysis. *Polymers*, 13(8), 1307.
<https://doi.org/10.3390/polym13081307>
- Kimura, K., Murano, S., Kurahashi, T., & Matsubara, S. (2021). Catalytic Aerobic Oxidation of Alkenes with Ferric Boroperoxo Porphyrin Complex; Reduction of Oxygen by Iron Porphyrin. *Bulletin of the Chemical Society of Japan*, 94(10), 2493–2497. <https://doi.org/10.1246/bcsj.20210242>
- Lagerspets, E., Valbonetti, E., Eronen, A., & Repo, T. (2021). A new catalytic approach for aerobic oxidation of primary alcohols based on a Copper(I)-thiophene carbaldimines. *Molecular Catalysis*, 509, 111637.
<https://doi.org/10.1016/j.mcat.2021.111637>
- Maligres, P. E., Chung, C. H., Dance, Z. E. X., Mattern, K. A., Phillips, E. M., Poirier, M. R., Sirk, K., & Wright, T. M. (2021). Discovery and Development of an Unusual Organocatalyst for the Conversion of Thymidine to Furanoid Glycal. *Organic Process Research & Development*, 26(3), 730–744.
<https://doi.org/10.1021/acs.oprd.1c00186>
- Margeson, M. J., Seeberger, F., Kelly, J. M., Leitl, J., Coburger, P., Szlosek, R., Müller, C. P., & Wolf, R. (2021). Expedient Hydrofunctionalisation of Carbonyls and Imines Initiated by Phosphacyclohexadienyl Anions. *ChemCatChem*, 13(17), 3761–3764. <https://doi.org/10.1002/cctc.202100651>
- Nielsen, M. B., Holmstrøm, T., & Pedersen, C. (2021). Stereoselective O-Glycosylations by Pyrylium Salt Organocatalysis. *Angewandte Chemie*, 134(6). <https://doi.org/10.1002/ange.202115394>

Catalysis

- Nielsen, M. B., Holmstrøm, T., & Pedersen, C. (2021). Stereospecific, Pyrylium Salt-Catalyzed O-Glycosylations of Phenols and Alkyl Alcohols. *ChemRxiv*. <https://doi.org/10.26434/chemrxiv-2021-v51mb>
- Nylund, P. V. S., Ségaud, N., & Albrecht, M. (2021). Highly Modular Piano-Stool N-Heterocyclic Carbene Iron Complexes: Impact of Ligand Variation on Hydrosilylation Activity. *Organometallics*, 40(10), 1538–1550. <https://doi.org/10.1021/acs.organomet.1c00200>
- Ren, R., Huang, P., Zhao, W., Li, T., Liu, M., & Wu, Y. (2021). A New ternary organometallic Pd(ii)/Fe(iii)/Ru(iii) self-assembly monolayer: the essential ensemble synergistic for improving catalytic activity. *RSC Advances*, 11(3), 1250–1260. <https://doi.org/10.1039/d0ra09347e>
- Sharma, H. A., Essman, J. Z., & Jacobsen, E. N. (2021). Enantioselective catalytic 1,2-boronate rearrangements. *Science*, 374(6568), 752–757. <https://doi.org/10.1126/science.abm0386>
- Strassfeld, D. A., Algera, R. F., Wickens, Z. K., & Jacobsen, E. N. (2021). A Case Study in Catalyst Generality: Simultaneous, Highly-Enantioselective Brønsted- and Lewis-Acid Mechanisms in Hydrogen-Bond-Donor Catalyzed Oxetane Openings. *Journal of the American Chemical Society*, 143(25), 9585–9594. <https://doi.org/10.1021/jacs.1c03992>
- Van Lijsebetten, F., Spiesschaert, Y., Winne, J. M., & Du Prez, F. (2021). Reprocessing of Covalent Adaptable Polyamide Networks through Internal Catalysis and Ring-Size Effects. *Journal of the American Chemical Society*, 143(38), 15834–15844. <https://doi.org/10.1021/jacs.1c07360>
- Wu, X., Ding, G., Lu, W., Yang, L., Wang, J., Zhang, Y., Xie, X., & Zhang, Z. (2021). Nickel-Catalyzed Hydrosilylation of Terminal Alkenes with Primary Silanes via Electrophilic Silicon–Hydrogen Bond Activation. *Organic Letters*, 23(4), 1434–1439. <https://doi.org/10.1021/acs.orglett.1c00111>
- Xu, J., Song, Y., He, J., Dong, S., Lin, L., & Feng, X. (2021). Asymmetric Catalytic Vinylogous Addition Reactions Initiated by Meinwald Rearrangement of Vinyl Epoxides. *Angewandte Chemie*, 60(26), 14521–14527. <https://doi.org/10.1002/anie.202102054>
- Xu, Y., Lv, X., Hongwei, H., Yuexiao, S., Qing, X., & Wenchao, P. (2021). Aminated N-doped graphene hydrogel for long-term catalytic oxidation in strong acidic environment. *Journal of Hazardous Materials*, 401, 123742. <https://doi.org/10.1016/j.jhazmat.2020.123742>

Catalysis

- Zhu, L., Dai, Y., Schrage, B. R., Ziegler, C. J., & Jia, L. (2021). Ligand and solvent effects on the catalytic activity and lifetime of zwitterionic Nickel(II) catalysts for alternating CO-Ethylene copolymerization. *Journal of Organometallic Chemistry*, 952, 122045.
<https://doi.org/10.1016/j.jorganchem.2021.122045>
- Bartlewicz, O., Jankowska-Wajda, M., & Maciejewski, H. (2020). Highly Efficient and Reusable Alkyne Hydrosilylation Catalysts Based on Rhodium Complexes Ligated by Imidazolium-Substituted Phosphine. *Catalysts*, 10(6), 608. <https://doi.org/10.3390/catal10060608>
- Chang, Y., Tang, T., Jagannathan, J. R., Hirbawi, N., Sun, S., Brown, J., & Franz, A. K. (2020). NMR Quantification of Halogen-Bonding Ability To Evaluate Catalyst Activity. *Organic Letters*, 22(16), 6647–6652.
<https://doi.org/10.1021/acs.orglett.0c02427>
- Deacy, A. C., Moreby, E., Phanopoulos, A., & Williams, C. K. (2020). Co(III)/Alkali-Metal(I) Heterodinuclear Catalysts for the Ring-Opening Copolymerization of CO₂ and Propylene Oxide. *Journal of the American Chemical Society*, 142(45), 19150–19160.
<https://doi.org/10.1021/jacs.0c07980>
- Deng, L., Wenzhong, S., Zijie, S., Qian, W., Su, Q., Dong, L., He, H., Li, Z., & Cheng, W. (2020). Highly synergistic effect of ionic liquids and Zn-based catalysts for synthesis of cyclic carbonates from urea and diols. *Journal of Molecular Liquids*, 316, 113883. <https://doi.org/10.1016/j.molliq.2020.113883>
- Gan, J., Peng, Y., Chen, Q., Hu, G., Xu, Q., Jin, L., & Xie, H. (2020). Reversible covalent chemistry of carbon dioxide unlocks the recalcitrance of cellulose for its enzymatic saccharification. *Bioresource Technology*, 295, 122230. <https://doi.org/10.1016/j.biortech.2019.122230>
- Gray, M., Hines, M. T., Parsutkar, M. M., Wahlstrom, A. J., Brunelli, N. A., & RajanBabu, T. V. (2020). Mechanism of Cobalt-Catalyzed Heterodimerization of Acrylates and 1,3-Dienes. A Potential Role of Cationic Cobalt(I) Intermediates. *ACS Catalysis*, 10(7), 4337–4348.
<https://doi.org/10.1021/acscatal.9b05455>
- Gustafson, K., Guðmundsson, A., Bajnóczi, É. G., Yuan, N., Zou, X., Persson, I., & Bäckvall, J. (2020). In Situ Structural Determination of a Homogeneous Ruthenium Racemization Catalyst and Its Activated Intermediates Using X-Ray Absorption Spectroscopy. *Chemistry: A European Journal*, 26(15), 3411–3419. <https://doi.org/10.1002/chem.201905479>

Catalysis

- Hernandez, E. M., & Jentoft, F. C. (2020). Spectroscopic Signatures Reveal Cyclopentenyl Cation Contributions in Methanol-to-Olefins Catalysis. *ACS Catalysis*, 10(10), 5764–5782. <https://doi.org/10.1021/acscatal.0c00721>
- Hood, D., Johnson, R. F., Carpenter, A. E., Younker, J. M., Vinyard, D. J., & Stanley, G. D. (2020). Highly active cationic cobalt(II) hydroformylation catalysts. *Science*, 367(6477), 542–548. <https://doi.org/10.1126/science.aaw7742>
- Johnson, C. J., Dabral, S., Rudolf, P., Licht, U., Hashmi, A. S. K., & Schaub, T. (2020). Liquid-liquid-phase Synthesis of exo -Vinylene Carbonates from Primary Propargylic Alcohols: Catalyst Design and Recycling. *Chemcatchem*, 13(1), 353–361. <https://doi.org/10.1002/cctc.202001551>
- Kohlmeyer, C., Schäfer, A., Huy, P. H., & Hilt, G. (2020). Formamide-Catalyzed Nucleophilic Substitutions: Mechanistic Insight and Rationalization of Catalytic Activity. *ACS Catalysis*, 10(19), 11567–11577. <https://doi.org/10.1021/acscatal.0c03348>
- Kuciński, K., Stachowiak, H., & Hreczycho, G. (2020). Silylation of silanols with hydrosilanes via main-group catalysis: the synthesis of unsymmetrical siloxanes and hydrosiloxanes. *Inorganic Chemistry Frontiers*, 7(21), 4190–4196. <https://doi.org/10.1039/d0qi00904k>
- Rabeah, J., Briois, V., Adomeit, S., La Fontaine, C., Bentrup, U., & Brückner, A. (2020). Multivariate Analysis of Coupled Operando EPR/XANES/EXAFS/UV–Vis/ATR–IR Spectroscopy: A New Dimension for Mechanistic Studies of Catalytic Gas-Liquid Phase Reactions. *Chemistry: A European Journal*, 26(33), 7395–7404. <https://doi.org/10.1002/chem.202000436>
- Ren, R., Bi, S., Wang, L., Zhao, W., Wei, D., Li, T., Xu, W., Liu, M., & Wu, Y. (2020). Terpyridine-based Pd(ii)/Ni(ii) organometallic framework nanosheets supported on graphene oxide—investigating the fabrication, tuning of catalytic properties and synergistic effects. *RSC Advances*, 10(39), 23080–23090. <https://doi.org/10.1039/d0ra02195d>
- Schnitzer, T., & Wennemers, H. (2020). Deactivation of Secondary Amine Catalysts via Aldol Reaction–Amine Catalysis under Solvent-Free Conditions. *Journal of Organic Chemistry*, 85(12), 7633–7640. <https://doi.org/10.1021/acs.joc.0c00665>

Catalysis

- Shan, C., Wang, T., & Han, M. (2020). Rational design of efficient steric catalyst for isomerization of 2-methyl-3-butenenitrile. *Molecular Catalysis*, 498, 111259. <https://doi.org/10.1016/j.mcat.2020.111259>
- Song, E., Wang, J., Li, T., Zhao, W., Liu, M., & Wu, Y. (2020). Novel ordered cyclopalladated aryl imine monolayers—Structure Designing for Enhancing Catalytic Performance. *Molecular Catalysis*, 482, 110671. <https://doi.org/10.1016/j.mcat.2019.110671>
- Vargová, D., Némethová, I., & Šebesta, R. (2020). Asymmetric copper-catalyzed conjugate additions of organometallic reagents in the syntheses of natural compounds and pharmaceuticals. *Organic and Biomolecular Chemistry*, 18(20), 3780–3796. <https://doi.org/10.1039/d0ob00278j>
- Wang, L., & Yu, Z. (2020). Transition-Metal-Catalyzed Cycloadditions for the Synthesis of Eight-Membered Carbocycles: an Update from 2010 to 2020. *Chinese Journal of Organic Chemistry*, 40(11), 3536. <https://doi.org/10.6023/cjoc202010025>
- Wang, L., Zhang, Y., Yuan, H., Du, R., Yao, J., & Li, H. (2020). Selective Aerobic Oxidation of Secondary C (sp^3)-H Bonds with NHPI/CAN Catalytic System. *Catalysis Letters*, 151(6), 1663–1669. <https://doi.org/10.1007/s10562-020-03406-6>
- Yu, L., Liu, Y., Wei, H., Chen, L., & An, L. (2020). Developing a high-quality catalyst from the pyrolysis of anaerobic granular sludge: Its application for m-cresol degradation. *Chemosphere*, 255, 126939. <https://doi.org/10.1016/j.chemosphere.2020.126939>
- Yu, S., Snavely, W. K., Chaudhari, R. V., & Subramaniam, B. (2020). Butadiene hydroformylation to adipaldehyde with Rh-based catalysts: Insights into ligand effects. *Molecular Catalysis*, 484, 110721. <https://doi.org/10.1016/j.mcat.2019.110721>

Computational Fluid Dynamics

- Oblak, B., Babnik, S., Erkavec-Zajec, V., Likozar, B., & Pohar, A. (2020). Digital Twinning Process for Stirred Tank Reactors/Separation Unit Operations through Tandem Experimental/Computational Fluid Dynamics (CFD) Simulations. *Processes*, 8(11), 1511. <https://doi.org/10.3390/pr8111511>
- Pohar, A., Naneh, O., Bajec, D., & Likozar, B. (2020). Chemical reactor/compounding vessel fingerprinting: Scale-up/down considerations for homogeneous and heterogeneous mixing using computational fluid dynamics. *Chemical Engineering Research & Design*, 163, 125–137. <https://doi.org/10.1016/j.cherd.2020.08.024>

- Castro-Ruiz, A., Grefe, L., Mejía, E., & Suman, S. G. (2023). Cobalt complexes with α -amino acid ligands catalyze the incorporation of CO₂ into cyclic carbonates. *Dalton Transactions*, 52(13), 4186–4199.
<https://doi.org/10.1039/d2dt03595b>
- Leventaki, E., Baena-Moreno, F., Wojtasz-Mucha, J., Sjöstedt, N., Tajik, A. R., Sardina, G., Ström, H., & Bernin, D. (2023). Experimental evaluation of black liquor carbonation for carbon dioxide capture. *Journal of CO₂ Utilization*, 72, 102516. <https://doi.org/10.1016/j.jcou.2023.102516>
- Kozlowski, A. M., & Hasani, M. (2022). Cellulose interactions with CO₂ in NaOH(aq): The (un)expected coagulation creates potential in cellulose technology. *Carbohydrate Polymers*, 294, 119771.
<https://doi.org/10.1016/j.carbpol.2022.119771>
- Leventaki, E., Baena-Moreno, F., Sardina, G., Ström, H., Ghahramani, E., Naserifar, S., Ho, P. H., Kozlowski, A. M., & Bernin, D. (2022). In-Line Monitoring of Carbon Dioxide Capture with Sodium Hydroxide in a Customized 3D-Printed Reactor without Forced Mixing. *Sustainability*, 14(17), 10795. <https://doi.org/10.3390/su141710795>
- Liu, A., & Lu, X. (2022). Alkoxy-Functionalized Amines as Single-Component Water-Lean CO₂ Absorbents with High Efficiency: The Benefit of Stabilized Carbamic Acid. *Industrial & Engineering Chemistry Research*, 61(20), 7080–7089. <https://doi.org/10.1021/acs.iecr.2c01361>
- Fang, Z., Deng, Z., Wan, X., Li, Z., Ma, X., Hussain, S., Ye, Z., & Peng, X. (2021). Keggin-type polyoxometalates molecularly loaded in Zr-ferrocene metal organic framework nanosheets for solar-driven CO₂ cycloaddition. *Applied Catalysis B: Environmental*, 296, 120329.
<https://doi.org/10.1016/j.apcatb.2021.120329>
- Zanone, A., Salvagnini, W. M., & De Paiva, J. L. (2021). Dynamic analysis of carbon dioxide desorption with 2-amino-2-methyl-1-propanol and piperazine blends. *Greenhouse Gases: Science and Technology*.
<https://doi.org/10.1002/ghg.2134>
- Bayer, U., Werner, D., Maichle-Mössmer, C., & Anwander, R. (2020). Effective and Reversible Carbon Dioxide Insertion into Cerium Pyrazolates. *Angewandte Chemie*, 59(14), 5830–5836.
<https://doi.org/10.1002/anie.201916483>

CO₂

- Chen, X., Rice, D. B., Danby, A. M., Lundin, M. D., Jackson, T. A., & Subramaniam, B. (2020). Experimental and computational investigations of C–H activation of cyclohexane by ozone in liquid CO₂. *Reaction Chemistry and Engineering*, 5(4), 793–802.
<https://doi.org/10.1039/c9re00442d>
- Lauridsen, J. M. V., Cho, S., Bae, H. I., & Lee, J. (2020). CO₂ (De)Activation in Carboxylation Reactions: A Case Study Using Grignard Reagents and Nucleophilic Bases. *Organometallics*, 39(9), 1652–1657.
<https://doi.org/10.1021/acs.organomet.9b00838>
- Liu, A., Li, J., Ren, B., Sha, X., Jiang, H., & Lu, X. (2020). Ether-functionalization of monoethanolamine (MEA) for reversible CO₂ capture under solvent-free conditions with high-capacity and low-viscosity. *Sustainable Energy and Fuels*, 4(3), 1276–1284.
<https://doi.org/10.1039/c9se00756c>
- Sugiyama, M., Akiyama, M., Nishiyama, K., Okazoe, T., & Nozaki, K. (2020). Synthesis of Fluorinated Dialkyl Carbonates from Carbon Dioxide as a Carbonyl Source. *Chemsuschem*, 13(7), 1775–1784.
<https://doi.org/10.1002/cssc.202000090>

Continuous Flow Chemistry

- Armstrong, C., Miyai, Y., Forzano, A. V., Kaushik, P., Rogers, L., & Roper, T. D. (2023). Leveraging first-principles and empirical models for disturbance detection in continuous pharmaceutical syntheses. *Journal of Flow Chemistry*. <https://doi.org/10.1007/s41981-023-00266-0>
- Castillo, I., Rehrl, J., Sagmeister, P., Lebl, R., Kruisz, J., Celikovic, S., Sipek, M., Kirschneck, D., Horn, M., Sacher, S., Cantillo, D., Williams, J. D., Khinast, J. G., & Kappe, C. O. (2023). Control of a complex multistep process for the production of mesalazine. *Journal of Process Control*, 122, 59–68. <https://doi.org/10.1016/j.jprocont.2022.12.009>
- Laybourn, A., Robertson, K., & Slater, A. G. (2023). Quid Pro Flow. *Journal of the American Chemical Society*, 145(8), 4355–4365. <https://doi.org/10.1021/jacs.2c13670>
- Wu, J., Zheng, X., Wan, L., Tao, Y., Cheng, D., & Chen, F. (2023). Selective reduction of carboxylic esters enabled by a coaxial double-tube continuous-flow reactor with on-the-fly H₂ degassing. *Reaction Chemistry and Engineering*, 8(6), 1414–1426. <https://doi.org/10.1039/d3re00078h>
- Azri, N. A., Patel, R., Ozbuyukkaya, G., Kowall, C., Cormack, G. V., Proust, N., Enick, R. M., & Veser, G. (2022). Batch-to-Continuous transition in the specialty chemicals Industry: Impact of operational differences on the production of dispersants. *Chemical Engineering Journal*, 445, 136775. <https://doi.org/10.1016/j.cej.2022.136775>
- Baumann, M. (2022). Synthesis of Bioactive Heterocycles Exploiting Modern Continuous Flow Chemistry. *More Synthetic Approaches to Nonaromatic Nitrogen Heterocycles*, Volume I, 411–447. <https://doi.org/10.1002/9781119757153.ch12>
- Chen, Y., & Monbaliu, J. M. (2022). Continuous-Flow Multistep Synthesis of Active Pharmaceutical Ingredients. *Flow and Microreactor Technology in Medicinal Chemistry*, 233–268. <https://doi.org/10.1002/9783527824595.ch7>
- Fava, E., Karlsson, S., & Jones, M. D. (2022). Using Oxygen as the Primary Oxidant in a Continuous Process: Application to the Development of an Efficient Route to AZD4635. *Organic Process Research & Development*, 26(4), 1048–1053. <https://doi.org/10.1021/acs.oprd.1c00279>

Continuous Flow Chemistry

- Frede, T. A., Maier, M. C., Kockmann, N., & Gruber-Wölfler, H. (2022). Advances in Continuous Flow Calorimetry. *Organic Process Research & Development*, 26(2), 267–277. <https://doi.org/10.1021/acs.oprd.1c00437>
- Mallia, C. J., McCreanor, N. G., Legg, D. H., Stewart, C. R., Coppock, S., Ashworth, I. W., Bars, J. L., Clarke, A., Clemens, G., Fisk, H., Benson, H., Oke, S., Churchill, T., Hoyle, M., Timms, L., Vare, K., Sims, M., & Knight, S. (2022). Development and Manufacture of a Curtius Rearrangement Using Continuous Flow towards the Large-Scale Manufacture of AZD7648. *Organic Process Research & Development*, 26(12), 3312–3322. <https://doi.org/10.1021/acs.oprd.2c00316>
- Marçon, H. M., & Pastre, J. C. (2022). Continuous flow Meerwein-Ponndorf-Verley reduction of HMF and furfural using basic zirconium carbonate. *RSC Advances*, 12(13), 7980–7989. <https://doi.org/10.1039/d2ra00588c>
- Rodriguez-Zubiri, M., & Felpin, F. (2022). Analytical Tools Integrated in Continuous-Flow Reactors: Which One for What? *Organic Process Research & Development*, 26(6), 1766–1793. <https://doi.org/10.1021/acs.oprd.2c00102>
- Sagandira, C. R., Nqeketo, S., Mhlana, K., Sonti, T., Watts, P., & Gaqa, S. G. (2022). Towards 4th industrial revolution efficient and sustainable continuous flow manufacturing of active pharmaceutical ingredients. *Reaction Chemistry and Engineering*, 7(2), 214–244. <https://doi.org/10.1039/d1re00483b>
- Simon, K. S., Sagmeister, P., Munday, R. H., Leslie, K. O., Hone, C. A., & Kappe, C. O. (2022). Automated flow and real-time analytics approach for screening functional group tolerance in heterogeneous catalytic reactions. *Catalysis Science & Technology*, 12(6), 1799–1811. <https://doi.org/10.1039/d2cy00059h>
- Talicska, C. N., O'Connell, E. C., Ward, H. W., Diaz, A., Hardink, M., Foley, D. P., Connolly, D., Girard, K. P., & Ljubicic, T. (2022). Process analytical technology (PAT): applications to flow processes for active pharmaceutical ingredient (API) development. *Reaction Chemistry and Engineering*, 7(6), 1419–1428. <https://doi.org/10.1039/d2re00004k>
- Wan, L., Kong, G., Liu, M., Jiang, M., Cheng, D., & Chen, F. (2022). Flow chemistry in the multi-step synthesis of natural products. *Green Synthesis and Catalysis*, 3(3), 243–258. <https://doi.org/10.1016/j.gresc.2022.07.007>

Continuous Flow Chemistry

- Alexander, L. L., Angel, M., & Marcus, B. (2021). Functional Group Interconversion Reactions in Continuous Flow Reactors. *Current Organic Chemistry*, 25(19), 2217–2231.
<https://doi.org/10.2174/1385272825666210610154414>
- Gambacorta, G., Sharley, J. S., & Baxendale, I. R. (2021). A comprehensive review of flow chemistry techniques tailored to the flavours and fragrances industries. *Beilstein Journal of Organic Chemistry*, 17, 1181–1312.
<https://doi.org/10.3762/bjoc.17.90>
- Glotz, G., Waniek, K., Schöggel, J., Cantillo, D., Stueckler, C., Arzt, A., Gollner, A., Schipfer, R. K., Baumgartner, R. J., & Kappe, C. O. (2021). Continuous Flow Synthesis of a Blocked Polyisocyanate: Process Intensification, Reaction Monitoring Via In-Line FTIR Analysis, and Comparative Life Cycle Assessment. *Organic Process Research & Development*, 25(10), 2367–2379.
<https://doi.org/10.1021/acs.oprd.1c00329>
- Hosoya, M., Shiino, G., & Tsuno, N. (2021). A Practical Transferring Method from Batch to Flow Synthesis of Dipeptides via Acid Chloride Assisted by Simulation of the Reaction Rate. *Chemistry Letters*, 50(6), 1254–1258.
<https://doi.org/10.1246/cl.210103>
- Hu, C. (2021). Reactor design and selection for effective continuous manufacturing of pharmaceuticals. *Journal of Flow Chemistry*, 11(3), 243–263. <https://doi.org/10.1007/s41981-021-00164-3>
- Ke, J., Gao, C., Folgueiras-Amador, A. A., Jolley, K. E., De Frutos, O., Mateos, C., Rincón, J. A., Brown, R. J. C., Poliakoff, M., & George, M. W. (2021). Self-Optimization of Continuous Flow Electrochemical Synthesis Using Fourier Transform Infrared Spectroscopy and Gas Chromatography. *Applied Spectroscopy*, 76(1), 38–50. <https://doi.org/10.1177/00037028211059848>
- Kim, D., Yoshizawa, K., Mitasev, B., Schnaderbeck, M. J., Zhang, H., Omori, M., Kayano, A., Nagai, M., Wakasugi, K., Watanabe, Y., Benayoud, F., Suzuki, Y., Motoki, T., Kaneko, T., Takaishi, M., Ishida, T., Takeda, K., Kita, Y., Yamamoto, N., ... Fang, F. G. (2021). Synthesis of BACE1 Inhibitors E2609/E2071 via Oxime–Olefin Cycloaddition Following a Process Risk Mitigation Strategy. *Organic Process Research & Development*, 26(3), 804–816.
<https://doi.org/10.1021/acs.oprd.1c00223>
- Leadbeater, N. E. (2021). Flow Chemistry as an Enabling Technology for Synthetic Organic Chemistry. In Springer eBooks (pp. 489–526).
https://doi.org/10.1007/978-1-0716-1579-9_14

Continuous Flow Chemistry

- Li, H., Sheeran, J. W., Kouvchinov, D., Clausen, A. M., Crouch, I., Bio, M. M., Fang, Y., Frank, S. D., Johnson, M. H., & Kerr, M. (2021). A Continuous Flow Process for LSN647712 via Double Organometallic Additions to Dimethylcarbamyl Chloride. *The Journal of Organic Chemistry*, 87(4), 2045–2054. <https://doi.org/10.1021/acs.joc.1c01354>
- Li, J., Šimek, H., Illoade, D., Jung, N., Bräse, S., Zappe, H., Dittmeyer, R., & Ladewig, B. P. (2021). In situ sensors for flow reactors – a review. *Reaction Chemistry and Engineering*, 6(9), 1497–1507. <https://doi.org/10.1039/d1re00038a>
- Miyai, Y., Formosa, A., Armstrong, C., Marquardt, B. J., Rogers, L. G., & Roper, T. D. (2021). PAT Implementation on a Mobile Continuous Pharmaceutical Manufacturing System: Real-Time Process Monitoring with In-Line FTIR and Raman Spectroscopy. *Organic Process Research & Development*, 25(12), 2707–2717. <https://doi.org/10.1021/acs.oprd.1c00299>
- Polterauer, D., Williams, J. D., Hone, C. A., & Kappe, C. O. (2021). Telescoped lithiation, C-arylation and methoxylation in flow-batch hybrid toward the synthesis of canagliflozin. *Tetrahedron Letters*, 82, 153351. <https://doi.org/10.1016/j.tetlet.2021.153351>
- Rossouw, N. P., Rizzacasa, M. A., & Polyzos, A. (2021). Flow-Assisted Synthesis of Alkyl Citrate Natural Products. *The Journal of Organic Chemistry*, 86(20), 14223–14231. <https://doi.org/10.1021/acs.joc.1c01645>
- Sagmeister, P., Kaldre, D., Sedelmeier, J., Moessner, C., Püntener, K., Kummler, D. S., Williams, J. D., & Kappe, C. O. (2021). Intensified Continuous Flow Synthesis and Workup of 1,5-Disubstituted Tetrazoles Enhanced by Real-Time Process Analytics. *Organic Process Research & Development*, 25(5), 1206–1214. <https://doi.org/10.1021/acs.oprd.1c00096>
- Sagmeister, P., Lebl, R., Castillo, I., Rehrl, J., Kruisz, J., Sipek, M., Horn, M., Sacher, S., Cantillo, D., Williams, J. D., & Kappe, C. O. (2021). Advanced Real-Time Process Analytics for Multistep Synthesis in Continuous Flow**. *Angewandte Chemie*, 60(15), 8139–8148. <https://doi.org/10.1002/anie.202016007>
- Tanbouza, N., Carreras, V., & Ollevier, T. (2021). Photochemical Cyclopropenation of Alkynes with Diazirines as Carbene Precursors in Continuous Flow. *Organic Letters*, 23(14), 5420–5424. <https://doi.org/10.1021/acs.orglett.1c01750>

Continuous Flow Chemistry

- Wei, B., Hatridge, T. A., Jones, C. W., & Davies, H. M. L. (2021). Copper(II) Acetate-Induced Oxidation of Hydrazones to Diazo Compounds under Flow Conditions Followed by Dirhodium-Catalyzed Enantioselective Cyclopropanation Reactions. *Organic Letters*, 23(14), 5363–5367. <https://doi.org/10.1021/acs.orglett.1c01580>
- Dennehy, O. C., Lynch, D. J., Collins, S., Maguire, A. R., & Moynihan, H. A. (2020). Scale-up and Optimization of a Continuous Flow Synthesis of an α -Thio- β -chloroacrylamide. *Organic Process Research & Development*, 24(10), 1978–1987. <https://doi.org/10.1021/acs.oprd.0c00079>
- Gioiello, A., Piccinno, A., Lozza, A. M., & Cerra, B. (2020). The Medicinal Chemistry in the Era of Machines and Automation: Recent Advances in Continuous Flow Technology. *Journal of Medicinal Chemistry*, 63(13), 6624–6647. <https://doi.org/10.1021/acs.jmedchem.9b01956>
- Hu, C., Testa, C. J., Wu, W., Shvedova, K., Shen, D. E., Sayin, R., Halkude, B. S., Casati, F., Hermant, P., Ramnath, A., Born, S. C., Takizawa, B., O'Connor, T. G., Yang, X., Ramanujam, S., & Mascia, S. (2020). An automated modular assembly line for drugs in a miniaturized plant. *Chemical Communications*, 56(7), 1026–1029. <https://doi.org/10.1039/c9cc06945c>
- Ma, C., Butler, D., Milligan, V., Hammann, B. A., Luo, H., Brazdil, J. F., Liu, D., Chaudhari, R. V., & Subramaniam, B. (2020). Continuous Process for the Production of Taurine from Monoethanolamine. *Industrial & Engineering Chemistry Research*, 59(29), 13007–13015. <https://doi.org/10.1021/acs.iecr.0c02277>
- Power, M. L., Alcock, E., & McGlacken, G. P. (2020). Organolithium Bases in Flow Chemistry: A Review. *Organic Process Research & Development*, 24(10), 1814–1838. <https://doi.org/10.1021/acs.oprd.0c00090>
- Tajti, Á., Tóth, N., Rávai, B., Csontos, I., Szabó, P., & Bálint, E. (2020). Study on the Microwave-Assisted Batch and Continuous Flow Synthesis of N-Alkyl-Isoindolin-1-One-3-Phosphonates by a Special Kabachnik–Fields Condensation. *Molecules*, 25(14), 3307. <https://doi.org/10.3390/molecules25143307>

Continuous Flow Chemistry

- Testa, C. J., Hu, C., Shvedova, K., Wu, W., Sayin, R., Casati, F., Halkude, B. S., Hermant, P., Shen, D. E., Ramnath, A., Su, Q., Born, S. C., Takizawa, B., Chattpadhyay, S., O'Connor, T. G., Yang, X., Ramanujam, S., & Mascia, S. (2020). Design and Commercialization of an End-to-End Continuous Pharmaceutical Production Process: A Pilot Plant Case Study. *Organic Process Research & Development*, 24(12), 2874–2889.
<https://doi.org/10.1021/acs.oprd.0c00383>
- Trojanowicz, M. (2020). Flow Chemistry in Contemporary Chemical Sciences: A Real Variety of Its Applications. *Molecules*, 25(6), 1434.
<https://doi.org/10.3390/molecules25061434>

Cross-Coupling

- Li, T., Han, P., Zhu, S., Zhang, W., Yang, B., Huang, D., Ren, R., Liu, M., & Wu, Y. (2023). Pd/Co₃O₄–Pd/PdO formed in situ on the surface of the self-assembly ferrocenylimine Pd(ii)/Co(ii) monolayer for catalyzing the Suzuki cross-coupling reaction—formation, synergistic effect, and catalytic mechanism. *New Journal of Chemistry*, 47(17), 8426–8438.
<https://doi.org/10.1039/d3nj00457k>
- Olding, A., Ho, C. C., Maiti, D., & Bissember, A. C. (2023). Structural authentication of intermediates of mechanistic significance in palladium- and nickel-catalysed cross-couplings: case studies. *Chemical Communications*, 59(35), 5144–5155. <https://doi.org/10.1039/d3cc00882g>
- Zhou, M., Tsien, J., Dykstra, R., Hughes, J. M. E., Peters, B. K., Merchant, R. R., Gutierrez, O., & Qin, T. (2023). Alkyl sulfinate as cross-coupling partners for programmable and stereospecific installation of C(sp³) bioisosteres. *Nature Chemistry*, 15(4), 550–559.
<https://doi.org/10.1038/s41557-023-01150-z>
- Malig, T. C., Kumar, A., & Kurita, K. L. (2022). Online and In Situ Monitoring of the Exchange, Transmetalation, and Cross-Coupling of a Negishi Reaction. *Organic Process Research & Development*, 26(5), 1514–1519.
<https://doi.org/10.1021/acs.oprd.2c00081>
- Murray, J. L., Zhang, L., Simon, A., Elipe, M. V. S., Wei, C. S., Caille, S., & Parsons, A. F. (2022). Kinetic and Mechanistic Investigations to Enable a Key Suzuki Coupling for Sotorasib Manufacture□What a Difference a Base Makes. *Organic Process Research & Development*, 27(1), 198–205.
<https://doi.org/10.1021/acs.oprd.2c00332>
- Na, H., & Mirica, L. M. (2022). Deciphering the mechanism of the Ni-photocatalyzed C–O cross-coupling reaction using a tridentate pyridinophane ligand. *Nature Communications*, 13(1).
<https://doi.org/10.1038/s41467-022-28948-8>

Crystallization

- Bosits, M. H., Orosz, Á., Szalay, Z., Pataki, H., Szilagyi, B., & Demeter, Á. (2023). Population Balance Modeling of Diastereomeric Salt Resolution. *Crystal Growth & Design*, 23(4), 2406–2416.
<https://doi.org/10.1021/acs.cgd.2c01376>
- Kang, J., Kim, J., & Kim, W. (2023). Grinding Method for Phase Transformation of Glycine. *PubMed*, 8(19), 17116–17121.
<https://doi.org/10.1021/acsomega.3c01435>
- Kaspar, F. (2023). Quality Data from Messy Spectra: How Isometric Points Increase Information Content in Highly Overlapping Spectra. *ChemBioChem*, 24(7). <https://doi.org/10.1002/cbic.202200744>
- Kim, Y., Kawajiri, Y., Rousseau, R. W., & Grover, M. A. (2023). Modeling of Nucleation, Growth, and Dissolution of Paracetamol in Ethanol Solution for Unseeded Batch Cooling Crystallization with Temperature-Cycling Strategy. *Industrial & Engineering Chemistry Research*, 62(6), 2866–2881.
<https://doi.org/10.1021/acs.iecr.2c03465>
- Li, X., Wang, N., Huang, Y., Xing, J., Huang, X., Ferguson, S., Wang, T., Zhou, L., & Hao, H. (2023). The role of solute conformation, solvent–solute and solute–solute interactions in crystal nucleation. *Aiche Journal*.
<https://doi.org/10.1002/aic.18144>
- Lin, Z., Wu, J., Tang, F., & Peng, X. (2023). Porphyrin Acceptors Improve the Crystallization of Y6 and the Exciton Dissociation in Ternary Organic Solar Cells. *ACS Applied Energy Materials*, 6(7), 3844–3853.
<https://doi.org/10.1021/acsaem.2c04123>
- Schiele, S. A., Bier, R., Ommert, A., & Briesen, H. (2023). Direct Crystal Growth Control: Controlling Crystallization Processes by Tracking an Analogue Twin. *Industrial & Engineering Chemistry Research*, 62(13), 5491–5501. <https://doi.org/10.1021/acs.iecr.2c04648>
- Verma, V., Bade, I., Karde, V., & Heng, J. Y. Y. (2023). Experimental Elucidation of Templated Crystallization and Secondary Processing of Peptides. *Pharmaceutics*, 15(4), 1288.
<https://doi.org/10.3390/pharmaceutics15041288>
- Verma, V., Mitchell, H., Errington, E., Guo, M., & Heng, J. Y. Y. (2023). Templated Crystallization of Glycine Homopeptides: Experimental and Computational Developments. *Chemical Engineering & Technology*, 46(6), 1271–1278. <https://doi.org/10.1002/ceat.202200575>

Crystallization

- Li, Z., & Zhang, B. (2022). Investigation of Glycine Polymorphic Transformation by In Situ ATR-FTIR and FT-Raman Spectroscopy. *Crystals*, 12(8), 1141. <https://doi.org/10.3390/cryst12081141>
- Rehman, G. U., Vetter, T., & Martin, P. L. (2022). Design, Development, and Analysis of an Automated Sampling Loop for Online Monitoring of Chiral Crystallization. *Organic Process Research & Development*, 26(4), 1063–1077. <https://doi.org/10.1021/acs.oprd.1c00320>
- Wu, H., Wang, J., Huang, X., Zhai, L., & Hao, H. (2022). Enlarging crystal size of zoxamide by polymeric additives that modulate burst nucleation. *Journal of Molecular Liquids*, 357, 119088. <https://doi.org/10.1016/j.molliq.2022.119088>
- Yang, L., Zhang, Y., Liu, P., Wang, C., Qu, Y., Cheng, J., & Yang, C. (2022). Kinetics and population balance modeling of antisolvent crystallization of polymorphic indomethacin. *Chemical Engineering Journal*, 428, 132591. <https://doi.org/10.1016/j.cej.2021.132591>
- Zhao, K., Liu, P., Li, K., Zhang, Y., Cao, J., Cheng, J., & Yang, C. (2022). Effect of polyethylene glycol additives on the polymorph and crystal habit of carbamazepine. *Journal of Crystal Growth*, 588, 126644. <https://doi.org/10.1016/j.jcrysGro.2022.126644>
- Albis, A., Lorenz, H., Jiménez, Y. M., & Gruber, T. (2021). Reactive Crystallization Kinetics of K_2SO_4 from Picromerite-Based $MgSO_4$ and KCl. *Crystals*, 11(12), 1558. <https://doi.org/10.3390/cryst11121558>
- Allsop, G. L., Carey, J. C., Joshi, S. N., Leong, P. L., & Mirata, M. A. (2021). Process Development toward a Pro-Drug of R-Baclofen. *Organic Process Research & Development*, 25(1), 136–147. <https://doi.org/10.1021/acs.oprd.0c00491>
- Larpent, P., Iuzzolino, L., Schoell, J., Codan, L., Tan, M., Newman, J. A., & Lee, A. M. (2021). Bullet-Proofing Doravirine (MK-1439) Starting Material Supply: Rapid Identification and Response to a New Polymorph of Ethyl Ester. *Crystal Growth & Design*, 21(7), 4207–4219. <https://doi.org/10.1021/acs.cgd.1c00469>

Crystallization

- Marzjarani, N. S., Fine, A., Dalby, S. M., Gangam, R., Poudyal, S., Behre, T., Ekkati, A. R., Armstrong, B. A., Shultz, C. S., Dance, Z. E. X., & Stone, K. H. (2021). Manufacturing Process Development for Belzutifan, Part 4: Nitrogen Flow Criticality for Transfer Hydrogenation Control. *Organic Process Research & Development*, 26(3), 533–542. <https://doi.org/10.1021/acs.oprd.1c00231>
- Rabe, T., Grape, E. S., Engesser, T. A., Inge, A. K., Ströh, J., Kohlmeyer-Yilmaz, G., Maurin, G., Maurin, G., Sönnichsen, F. D., & Fischer, R. A. (2021). Metal-Dependent and Selective Crystallization of CAU-10 and MIL-53 Frameworks through Linker Nitration. *Chemistry a European Journal*, 27(28), 7696–7703. <https://doi.org/10.1002/chem.202100373>
- Tanaka, M., Hosoya, M., Manaka, A., & Tsuno, N. (2021). Synthesis of a dipeptide by integrating a continuous flow reaction and continuous crystallization. *Chemical Engineering Research & Design*, 175, 259–271. <https://doi.org/10.1016/j.cherd.2021.09.013>
- Xu, S., Bu, Y., Jiang, S., Yang, P., & Wang, Y. (2021). Insights into the Role of Solvents in Nucleation Kinetics of Glutaric Acid from Metastable Zone Widths. *Industrial & Engineering Chemistry Research*, 60(7), 3073–3082. <https://doi.org/10.1021/acs.iecr.0c04368>
- Zhao, X., Webb, N. J., Muehlfeld, M., Stottlemeyer, A. L., & Russell, M. B. (2021). Application of a Semiautomated Crystallizer to Study Oiling-Out and Agglomeration Events—A Case Study in Industrial Crystallization Optimization. *Organic Process Research & Development*, 25(3), 564–575. <https://doi.org/10.1021/acs.oprd.0c00494>
- Alvarenga, R. L., Bernardo, A., & Gupta, D. (2020). Improvement of an Industrial Crystallization Process: The Production of Virginiamycin. *Industrial & Engineering Chemistry Research*, 59(16), 7839–7848. <https://doi.org/10.1021/acs.iecr.0c00127>
- Beaver, M. G., Shi, X., Riedel, J., Patel, P., Zeng, A., Corbett, M., Robinson, J., Parsons, A. F., Cui, S., Baucom, K. D., Lovette, M. A., Içten, E., Brown, D. S., Allian, A., Flick, T. G., Chen, W. T., Yang, N., & Walker, S. W. (2020). Continuous Process Improvement in the Manufacture of Carfilzomib, Part 2: An Improved Process for Synthesis of the Epoxyketone Warhead. *Organic Process Research & Development*, 24(4), 490–499. <https://doi.org/10.1021/acs.oprd.0c00052>

Crystallization

- Cao, Y., Du, S., Ke, X., Xu, S., Lan, Y., Zhang, T., Tang, W., Wang, J., & Gong, J. (2020b). Interplay between Thermodynamics and Kinetics on Polymorphic Behavior of Vortioxetine Hydrobromide in Reactive Crystallization. *Organic Process Research & Development*, 24(7), 1233–1243.
<https://doi.org/10.1021/acs.oprd.9b00384>
- Hu, C., Shores, B. T., Derech, R. A., Testa, C. J., Hermant, P., Wu, W., Shvedova, K., Ramnath, A., Ismaili, L. Q. A., Su, Q., Sayin, R., Born, S. C., Takizawa, B., O'Connor, T. G., Yang, X., Ramanujam, S., & Mascia, S. (2020). Continuous reactive crystallization of an API in PFR-CSTR cascade with in-line PATs. *Reaction Chemistry and Engineering*, 5(10), 1950–1962.
<https://doi.org/10.1039/dOre00216j>
- Kim, Y. J., Kawajiri, Y., Rousseau, R. W., & Grover, M. A. (2020). Modeling of Nucleation, Growth, Dissolution, and Disappearance of Paracetamol in Ethanol Solution for Unseeded Batch Cooling Crystallization with Temperature-Cycling Strategy. *ChemRxiv*.
<https://doi.org/10.26434/chemrxiv.13011491.v1>
- Li, Z., Yu, T., Lee, T., & Kim, W. H. (2020). Cocrystallization of Caffeine–Maleic Acid in a Batchelor Vortex Flow. *Crystal Growth & Design*, 20(3), 1618–1627. <https://doi.org/10.1021/acs.cgd.9b01362>
- Liu, J., Liu, T., Liu, T., Yue, H., Zhang, F., & Feiran, S. (2020). Data-driven modeling of product crystal size distribution and optimal input design for batch cooling crystallization processes. *Journal of Process Control*, 96, 1–14.
<https://doi.org/10.1016/j.jprocont.2020.10.003>
- Liu, X., Zhang, Y., & Wang, X. (2020). Study on Co-Crystallization of LCZ696 Using In Situ ATR-FTIR and Imaging. *Crystals*, 10(10), 922.
<https://doi.org/10.3390/crust10100922>
- Meng, W., Sirota, E. B., Feng, H., McMullen, J. P., Codan, L., & Cote, A. S. (2020). Effective Control of Crystal Size via an Integrated Crystallization, Wet Milling, and Annealing Recirculation System. *Organic Process Research & Development*, 24(11), 2639–2650. <https://doi.org/10.1021/acs.oprd.0c00307>
- Schiele, S. A., Meinhardt, R., Eder, C., & Briesen, H. (2020). ATR-FTIR spectroscopy for in-line anomer concentration measurements in solution: A case study of lactose. *Food Control*, 110, 107024.
<https://doi.org/10.1016/j.foodcont.2019.107024>

Crystallization

- Trampuž, M., Teslić, D., & Likozar, B. (2020). Process analytical technology-based (PAT) model simulations of a combined cooling, seeded and antisolvent crystallization of an active pharmaceutical ingredient (API). *Powder Technology*, 366, 873–890.
<https://doi.org/10.1016/j.powtec.2020.03.027>
- Unno, J., & Hirasawa, I. (2020). Parameter Estimation of the Stochastic Primary Nucleation Kinetics by Stochastic Integrals Using Focused-Beam Reflectance Measurements. *Crystals*, 10(5), 380.
<https://doi.org/10.3390/crust10050380>

Dissolution and Solubility

- Bianchera, A., Nebuloni, M., Colombo, N., Pirola, D., & Bettini, R. (2022). Highly Polymorphic Materials and Dissolution Behaviour: The Peculiar Case of Rifaximin. *Pharmaceutics*, 15(1), 53.
<https://doi.org/10.3390/pharmaceutics15010053>
- Simone, E., Beveridge, G., Sillers, P., Webb, J., George, N., & Hone, J. (2022). Analysis of the Dissolution and Crystallization of Partly Immiscible Ternary Mixtures Using a Composite Sensor Array of In Situ ATR-FTIR, Laser Backscattering, and Imaging. *Industrial & Engineering Chemistry Research*, 61(50), 18514–18529. <https://doi.org/10.1021/acs.iecr.2c03494>
- Gao, Y. (n.d.). Dissolution Kinetics of a BCS Class II Active Pharmaceutical Ingredient: Experimental & Modelling Approaches.
<https://researchrepository.ucd.ie/entities/publication/42d575a7-f8ee-4927-8eb9-d8fcb31c3892/details>
- Jakob, A., Grilc, M., Teržan, J., & Likozar, B. (2021). Solubility Temperature Dependence of Bio-Based Levulinic Acid, Furfural, and Hydroxymethylfurfural in Water, Nonpolar, Polar Aprotic and Protic Solvents. *Processes*, 9(6), 924.
<https://doi.org/10.3390/pr9060924>
- Ibis, F., Dhand, P., Suleymanli, S., Van Der Heijden, A. G., Kramer, H. J. M., & Eral, H. B. (2020). A Combined Experimental and Modelling Study on Solubility of Calcium Oxalate Monohydrate at Physiologically Relevant pH and Temperatures. *Crystals*, 10(10), 924. <https://doi.org/10.3390/crust10100924>

Electrochemistry

- Lee, D. J., Love, A., Mansouri, Z., Clarke, T. H. W., Harrowven, D. C., Jefferson-Loveday, R., Pickering, S. J., Poliakoff, M., & George, M. W. (2022). High-Productivity Single-Pass Electrochemical Birch Reduction of Naphthalenes in a Continuous Flow Electrochemical Taylor Vortex Reactor. *Organic Process Research & Development*, 26(9), 2674–2684.
<https://doi.org/10.1021/acs.oprd.2c00108>
- Wysokowski, M., Nowacki, K., Jaworski, F., Niemczak, M., Bartczak, P., Sandomierski, M., Piasecki, A., Galinski, M., & Jesionowski, T. (2022). Ionic liquid-assisted synthesis of chitin–ethylene glycol hydrogels as electrolyte membranes for sustainable electrochemical capacitors. *Scientific Reports*, 12(1). <https://doi.org/10.1038/s41598-022-12931-w>
- Tanbouza, N., Ollevier, T., & Lam, K. (2020). Bridging Lab and Industry with Flow Electrochemistry. *iScience*, 23(11), 101720.
<https://doi.org/10.1016/j.isci.2020.101720>
- Turguła, A., Graś, M., Gabryelczyk, A., Lota, G., & Pernak, J. (2020). Long-Chain Ionic Liquids Based on Monoquaternary DABCO Cations and TFSI Anions: Towards Stable Electrolytes for Electrochemical Capacitors. *Collection of Czechoslovak Chemical Communications*, 85(12), 2679–2688.
<https://doi.org/10.1002/cplu.202000680>

Hydrogenation

- Fan, H., Li, B., Zhao, X., Fang, Z., Chen, C., Zhou, W., Yang, W., Li, M., Lu, X., & Fu, J. (2023). Maltose hydrogenation to maltitol over industrial Raney Ni catalyst: Kinetics and mechanism. *Aiche Journal*, 69(7).
<https://doi.org/10.1002/aic.18056>
- Wu, J., Wang, L., Xu, S., Cao, Y., Han, Z., & Li, H. (2023). Sequential hydrogenation of nitroaromatics to alicyclic amines via highly-dispersed Ru–Pd nanoparticles anchored on air-exfoliated C_3N_4 nanosheets. *RSC Advances*, 13(3), 2024–2035. <https://doi.org/10.1039/d2ra07612h>
- Zhang, H., Zhang, X., Sun, Q., He, Q., Ji, H. J., & He, X. (2023). Boosting hydrogenation properties of Pt single-atom catalysts via tailoring the electronic structures by coordination number regulation. *Chemical Engineering Journal*, 455, 140808. <https://doi.org/10.1016/j.cej.2022.140808>
- Gao, G., Remón, J., Jiang, Z., Yao, L., & Hu, C. (2022). Selective hydrogenation of furfural to furfuryl alcohol in water under mild conditions over a hydrotalcite-derived Pt-based catalyst. *Applied Catalysis B-environmental*, 309, 121260. <https://doi.org/10.1016/j.apcatb.2022.121260>
- Farkas, G., Madarász, J., & Bakos, J. (2021). Asymmetric Hydrogenation in Continuous-Flow Conditions. In *Asymmetric Hydrogenation and Transfer Hydrogenation*. <https://doi.org/10.1002/9783527822294.ch10>
- Li, G., Zhao, Z., Mou, T., Tan, Q., Wang, B., & Resasco, D. E. (2021). Experimental and computational kinetics study of the liquid-phase hydrogenation of C=C and C=O bonds. *Journal of Catalysis*, 404, 771–785. <https://doi.org/10.1016/j.jcat.2021.09.002>
- Li, Y., Zhang, R., Meng, X., Ouyang, P., Liu, H., Xu, C., & Liu, Z. (2021). Characterization and Hydrogenation Removal of Acid-Soluble Oil in Ionic Liquid Catalysts for Isobutane Alkylation. *Industrial & Engineering Chemistry Research*, 60(38), 13764–13773. <https://doi.org/10.1021/acs.iecr.1c02376>

Hydrosilylation

- Karasiewicz, J., Dutkiewicz, M., Olejnik, A., Leśniewska, J., Janicka, Z., & Maciejewski, H. (2023). POSS derivatives containing extremely different surface properties as emulsifiers in colloidal systems. *Journal of Molecular Liquids*, 379, 121642. <https://doi.org/10.1016/j.molliq.2023.121642>
- Grzelak, M., Frąckowiak, D., & Marciniec, B. (2020). Dialkenylgermanes as Precursors of Silsesquioxane-based Macromolecular Structures. *Chemistry—An Asian Journal*, 15(10), 1598–1604.
<https://doi.org/10.1002/asia.202000353>
- Grzelak, M., Frąckowiak, D., Januszewski, R., & Marciniec, B. (2020). Introduction of organogermyl functionalities to cage silsesquioxanes. *Dalton Transactions*, 49(16), 5055–5063. <https://doi.org/10.1039/d0dt00557f>
- Januszewski, R., Dutkiewicz, M., Kownacki, I., & Marciniec, B. (2020). The effect of organosilicon modifier structure on the efficiency of the polybutadiene hydrosilylation process. *Catalysis Science & Technology*, 10(21), 7240–7248. <https://doi.org/10.1039/d0cy01376e>
- Karasiewicz, J., & Krawczyk, J. (2020). Thermodynamic Analysis of Trisiloxane Surfactant Adsorption and Aggregation Processes. *Molecules*, 25(23), 5669. <https://doi.org/10.3390/molecules25235669>
- Mituła, K., Duszczał, J., Rzonsowska, M., Żak, P., & Dudziec, B. (2020). Polysiloxanes Grafted with Mono(alkenyl)Silsesquioxanes—Particular Concept for Their Connection. *Materials*, 13(21), 4784.
<https://doi.org/10.3390/ma13214784>

Inorganic Chemistry

- Behrendt, G., Prinz, N., Wolf, A., Baumgarten, L., Gaur, A., Grunwaldt, J., Zobel, M., Behrens, M., & Mangelsen, S. (2022). Substitution of Copper by Magnesium in Malachite: Insights into the Synthesis and Structural Effects. *Inorganic Chemistry*, 61(49), 19678–19694.
<https://doi.org/10.1021/acs.inorgchem.2c01976>
- Isaac, C. J., Wilson, C. I., Burnage, A. L., Miloserdov, F. M., Mahon, M. F., MacGregor, S., & Whittlesey, M. K. (2022). Experimental and Computational Studies of Ruthenium Complexes Bearing Z-Acceptor Aluminum-Based Phosphine Pincer Ligands. *Inorganic Chemistry*, 61(50), 20690–20698.
<https://doi.org/10.1021/acs.inorgchem.2c03665>
- Paula, S., Goulding, L. S., Robertson, K. N., & Clyburne, J. a. C. (2021). Simple Ion–Gas Mixtures as a Source of Key Molecules Relevant to Prebiotic Chemistry. *Molecules*, 26(23), 7394.
<https://doi.org/10.3390/molecules26237394>
- Ambrose, K., Murphy, J. G., & Kozak, C. M. (2020). Chromium Diamino-bis(phenolate) Complexes as Catalysts for the Ring-Opening Copolymerization of Cyclohexene Oxide and Carbon Dioxide. *Inorganic Chemistry*, 59(20), 15375–15383.
<https://doi.org/10.1021/acs.inorgchem.0c02348>
- Lu, S., Chiou, T., Li, W., Wang, C., Wang, Y., Lee, W. S., Lu, T., & Liaw, W. (2020). Dinitrosyliron Complex [(PMDTA)Fe(NO)₂]: Intermediate for Nitric Oxide Monooxygenation Activity in Nonheme Iron Complex. *Inorganic Chemistry*, 59(12), 8308–8319.
<https://doi.org/10.1021/acs.inorgchem.0c00691>
- Regenauer, N. I., Jänner, S., Wadeohl, H., & Roșca, D. (2020). A Redox-Active Heterobimetallic N-Heterocyclic Carbene Based on a Bis(imino) pyrazine Ligand Scaffold. *Angewandte Chemie*, 59(43), 19320–19328.
<https://doi.org/10.1002/anie.202005865>
- Sanz, C. A., Stein, C. a. M., & Fryzuk, M. D. (2020). Synthesis of a T-Shaped Cobalt(I) Complex and Its Dinitrogen Adduct. *European Journal of Inorganic Chemistry*, 2020(15–16), 1465–1471.
<https://doi.org/10.1002/ejic.201901129>

Ionic Liquids

- Olejniczak, A., Stachowiak, W., Rzemieniecki, T., & Niemczak, M. (2023). Adjustment of the Structure of the Simplest Amino Acid Present in Nature—Glycine, toward More Environmentally Friendly Ionic Forms of Phenoxypropionate-Based Herbicides. *International Journal of Molecular Sciences*, 24(2), 1360. <https://doi.org/10.3390/ijms24021360>
- Kansy, D., Czaja, K., Bosowska, K., & Groch, P. (2022). Ionic Liquids as Homogeneous Catalysts for Glycerol Oligomerization. *Polymers*, 14(6), 1200. <https://doi.org/10.3390/polym14061200>
- Li, J., Kuang, Y., Bi, Y., Sun, S., & Peng, D. (2022). Preparation of biopolyols by pyrrolidone ionic liquid-catalyzed ring-opening of epoxidized soybean oils. *Industrial Crops and Products*, 185, 115112. <https://doi.org/10.1016/j.indcrop.2022.115112>
- Rzemieniecki, T., Kleiber, T., & Pernak, J. (2021). Naturally based ionic liquids with indole-3-acetate anions and cations derived from cinchona alkaloids. *RSC Advances*, 11(44), 27530–27540. <https://doi.org/10.1039/d1ra04805h>
- Rzemieniecki, T., Wojcieszak, M., Materna, K., Praczyk, T., & Pernak, J. (2021). Synthetic auxin-based double salt ionic liquids as herbicides with improved physicochemical properties and biological activity. *Journal of Molecular Liquids*, 334, 116452. <https://doi.org/10.1016/j.molliq.2021.116452>
- Stachowiak, W., Szumski, R., Homa, J., Woźniak-Karczewska, M., Parus, A., Strzemiecka, B., Chrzanowski, Ł., & Niemczak, M. (2021). Transformation of Iodosulfuron-Methyl into Ionic Liquids Enables Elimination of Additional Surfactants in Commercial Formulations of Sulfonylureas. *Molecules*, 26(15), 4396. <https://doi.org/10.3390/molecules26154396>
- Szymaniak, D., Ciarka, K., Marcinkowska, K., Praczyk, T., Gwiazdowska, D., Marchwińska, K., Walkiewicz, F., & Pernak, J. (2021). Bifunctional Double-Salt Ionic Liquids Containing both 4-Chloro-2-Methylphenoxyacetate and L-Tryptophanate Anions with Herbicidal and Antimicrobial Activity. *ACS Omega*, 6(49), 33779–33791. <https://doi.org/10.1021/acsomega.1c05048>
- Wu, G., Liu, Y., Liu, G., Hu, R., & Gao, G. (2021). Role of aromatics in isobutane alkylation of chloroaluminate ionic liquids: Insights from aromatic – ion interaction. *Journal of Catalysis*, 396, 54–64. <https://doi.org/10.1016/j.jcat.2021.01.037>

Ionic Liquids

- Jankowska-Wajda, M., Bartlewicz, O., Pietras, P., & Maciejewski, H. (2020). Piperidinium and Pyrrolidinium Ionic Liquids as Precursors in the Synthesis of New Platinum Catalysts for Hydrosilylation. *Catalysts*, 10(8), 919.
<https://doi.org/10.3390/catal10080919>
- Niemczak, M., Sobiech, Ł., & Grzanka, M. (2020). Iodosulfuron-Methyl-Based Herbicidal Ionic Liquids Comprising Alkyl Betainate Cation as Novel Active Ingredients with Reduced Environmental Impact and Excellent Efficacy. *Journal of Agricultural and Food Chemistry*, 68(47), 13661–13671.
<https://doi.org/10.1021/acs.jafc.0c05850>
- Praczyk, M., Wielgusz, K., Stachowiak, W., Niemczak, M., & Pernak, J. (2020). Synthesis and efficacy of herbicidal ionic liquids with chlorsulfuron as the anion. *Open Chemistry*, 18(1), 1282–1293.
<https://doi.org/10.1515/chem-2020-0165>
- Stachowiak, W., Rzemieniecki, T., Klejdysz, T., Pernak, J., & Niemczak, M. (2020). "Sweet" ionic liquids comprising the acesulfame anion – synthesis, physicochemical properties and antifeedant activity towards stored product insects. *New Journal of Chemistry*, 44(17), 7017–7028.
<https://doi.org/10.1039/c9nj06005g>
- Turguła, A., Stęsik, K., Materna, K., Klejdysz, T., Praczyk, T., & Pernak, J. (2020). Third-generation ionic liquids with N-alkylated 1,4-diazabicyclo[2.2.2]octane cations and pelargonate anions. *RSC Advances*, 10(15), 8653–8663. <https://doi.org/10.1039/d0ra00766h>

Kinetics

- Casas-Orozco, D., Laky, D., Mackey, J., Reklaitis, G., & Nagy, Z. (2023). Reaction kinetics determination and uncertainty analysis for the synthesis of the cancer drug lomustine. *Chemical Engineering Science*, 275, 118591. <https://doi.org/10.1016/j.ces.2023.118591>
- Deem, M. C., Cai, I., Derasp, J. S., Prieto, P. C., Sato, Y., Liu, J., Kukor, A. J., & Hein, J. E. (2023). Best Practices for the Collection of Robust Time Course Reaction Profiles for Kinetic Studies. *ACS Catalysis*, 13(2), 1418–1430. <https://doi.org/10.1021/acscatal.2c05045>
- Newton, O. J., Hellgardt, K., Richardson, J., & Hii, K. K. M. (2023). ‘Homeopathic’ Palladium Catalysis? The observation of distinct kinetic regimes in a ligandless Heck reaction at (ultra-)low catalyst loadings. *Journal of Catalysis*, 424, 29–38. <https://doi.org/10.1016/j.jcat.2023.05.005>
- Yeo, S., Choi, A., Greaves, S., Meijer, A., Silvestri, I. P., & Coldham, I. (2023). Kinetic Resolution of 2-Aryldihydroquinolines using Lithiation – Synthesis of Chiral 1,2- and 1,4-Dihydroquinolines. *Chemistry: A European Journal*. <https://doi.org/10.1002/chem.202300815>
- Zhao, Y., Zhang, X., Chen, Y., Zhang, P., & Mao, H. (2023). Application of in-situ ATR-IR Spectroscopy in Bisphenol F Synthetic Process: Optimization, Mechanistic and Kinetics Study. *Analytical Methods*, 15(22), 2736–2744. <https://doi.org/10.1039/d3ay00529a>
- Hammarback, L. A., Bishop, A. L., Jordan, C., Athavan, G., Eastwood, J., Burden, T. J., Bray, J. T. W., Clarke, F., Robinson, A., Krieger, J., Whitwood, A. C., Clark, I. M., Towrie, M., Lynam, J. M., & Fairlamb, I. J. S. (2022). Manganese-Mediated C–H Bond Activation of Fluorinated Aromatics and the ortho-Fluorine Effect: Kinetic Analysis by In Situ Infrared Spectroscopic Analysis and Time-Resolved Methods. *ACS Catalysis*, 12(2), 1532–1544. <https://doi.org/10.1021/acscatal.1c05477>
- Jin, J., Ni, L., Qiu, W., Xu, Q., & Ye, S. (2022). Kinetic Parameter Evaluation of Acetohydroxamic Acid Synthesis Using Online Infrared Spectra and Ph Profile Analysis. *SSRN*. <https://doi.org/10.2139/ssrn.4272646>
- Nolte, L., & Brandenbusch, C. (2022). Monitoring and investigating reactive extraction of (di-)carboxylic acids using online FTIR – Part II: Reaction equilibria, reaction kinetics and competition within the complex formation between itaconic acid and several amine extractants. *Journal of Molecular Liquids*, 366, 120223. <https://doi.org/10.1016/j.molliq.2022.120223>

Kinetics

- Pabsch, D., Analysis, J. L. D., Analysis, J. S. D., Analysis, A. S. D., Figiel, P., Sadowski, G., & Held, C. (2022). Influence of solvent and salt on kinetics and equilibrium of esterification reactions. *Chemical Engineering Science*, 263, 118046. <https://doi.org/10.1016/j.ces.2022.118046>
- Ramirez, V., Van Pelt, E. B., Pooni, R. K., Bañales, A. J. M., & Larsen, M. (2022). Thermodynamic, kinetic, and mechanistic studies of the thermal guanidine metathesis reaction. *Organic & Biomolecular Chemistry*, 20(29), 5861–5868. <https://doi.org/10.1039/d2ob01036d>
- Choi, A. H., El-Tunsi, A., Wang, Y., Meijer, A. J. H. M., Li, J., Li, X., Silvestri, I. P., & Coldham, I. (2021). Asymmetric Synthesis of 2-Arylindolines and 2,2-Disubstituted Indolines by Kinetic Resolution. *Chemistry: A European Journal*, 27(45), 11670–11675. <https://doi.org/10.1002/chem.202101248>
- Giustra, Z. X., Chen, G., Vasiliu, M., Karkamkar, A. J., Autrey, T., Dixon, D. A., & Liu, S. (2021). A comparison of hydrogen release kinetics from 5- and 6-membered 1,2-BN-cycloalkanes. *RSC Advances*, 11(54), 34132–34136. <https://doi.org/10.1039/d1ra07477f>
- Leopold, M., Siebert, M., Siegle, A. F., & Trapp, O. (2021). Reaction Network Analysis of the Ruthenium-Catalyzed Reduction of Carbon Dioxide to Dimethoxymethane. *Chemcatchem*, 13(12), 2807–2814. <https://doi.org/10.1002/cctc.202100437>
- Van Putten, R., Uslamin, E. A., & Pidko, E. A. (2021). Automated high-resolution sampling and multi-mode operando spectroscopy of (bio-) chemical reactions for kinetic analysis, reaction characterization, and quality control. *Invention Disclosure*, 1, 100002. <https://doi.org/10.1016/j.inv.2021.100002>
- Yang, C., Feng, H., & Stone, K. H. (2021). Characterization of Propionyl Phosphate Hydrolysis Kinetics by Data-Rich Experiments and In-Line Process Analytical Technology. *Organic Process Research & Development*. <https://doi.org/10.1021/acs.oprd.0c00451>
- Kodera, T., Kobari, M., & Hirasawa, I. (2020). Nucleation Kinetics Estimated by Using the Modified Induction Time in Cooling Crystallization and the Applicability to the Combined Process of Antisolvent and Cooling Crystallization. *Journal of Chemical Engineering of Japan*, 53(11), 698–707. <https://doi.org/10.1252/jcej.20we053>

Kinetics

- Lee, J. S. H., Caster, K. L., Maddaleno, T., Donnellan, Z. N., Selby, T. M., & Goulay, F. (2020). Kinetic study of the CN radical reaction with 2-methylfuran. *International Journal of Chemical Kinetics*, 52(11), 838–851. <https://doi.org/10.1002/kin.21403>
- Nouch, R., Woodward, S., Willcox, D., Robinson, D., & Lewis, W. (2020). Mechanistic-Insight-Driven Rate Enhancement of Asymmetric Copper-Catalyzed 1,4-Addition of Dialkylzinc Reagents to Enones. *Organometallics*, 39(6), 834–840. <https://doi.org/10.1021/acs.organomet.0c00005>

Kinetics Modeling

- Ni, L., Qiu, W., Jin, J., Xu, Q., & Ye, S. (2022). Reaction Analysis and Process Optimization with Online Infrared Data Based on Kinetic Modeling and Partial Least Squares Quantitation. *Applied Spectroscopy*, 76(11), 1356–1366. <https://doi.org/10.1177/00037028221123091>
- Gong, J., Quan, Y., Wang, J., Yin, Q., & Li, T. (2021). Form selection of concomitant polymorphs: A case study informed by crystallization kinetics modeling. *Aiche Journal*, 67(4). <https://doi.org/10.1002/aic.17129>
- Fath, V., Lau, P., Greve, C., Kockmann, N., & Röder, T. (2020). Efficient Kinetic Data Acquisition and Model Prediction: Continuous Flow Microreactors, Inline Fourier Transform Infrared Spectroscopy, and Self-Modeling Curve Resolution. *Organic Process Research & Development*, 24(10), 1955–1968. <https://doi.org/10.1021/acs.oprd.0c00037>
- Lobo, V. M., Ortiz, R. W. P., Gonçalves, V. M., Da Silva, J. F. C., & Kartnaller, V. (2020). Kinetic Modeling of Maleic Acid Isomerization to Fumaric Acid Catalyzed by Thiourea Determined by Attenuated Total Reflectance Fourier-Transform Infrared Spectroscopy. *Organic Process Research & Development*, 24(6), 988–996. <https://doi.org/10.1021/acs.oprd.9b00487>
- Schenk, C., Biegler, L. T., Han, L., & Mustakis, J. (2021). Kinetic Parameter Estimation from Spectroscopic Data for a Multi-Stage Solid–Liquid Pharmaceutical Process. *Organic Process Research & Development*, 25(3), 373–383. <https://doi.org/10.1021/acs.oprd.0c00277>

Mechanism

- Burden, T. J., Fernandez, K. P. R., Kagoro, M., Eastwood, J., Tanner, T., Whitwood, A. C., Clark, I. P., Towrie, M., Krieger, J., Lynam, J. M., & Fairlamb, I. J. S. (2023). Coumarin C–H Functionalization by Mn(I) Carbonyls: Mechanistic Insight by Ultra-Fast IR Spectroscopic Analysis. *Chemistry: A European Journal*, 29(25). <https://doi.org/10.1002/chem.202203038>
- Kristensen, B. R., & Pedersen, C. M. (2023). Self-Promoted N-Glycosylation: Extended Substrate Scope and Substituent Effects. *European Journal of Organic Chemistry*. <https://doi.org/10.1002/ejoc.202300213>
- Ni, L., Yang, S., Qiu, W., Jin, J., Xu, Q., & Ye, S. (2023). Mechanism study of the N-butoxycarbonyl-2,5-dimethylpyrrole synthesis reaction based on in-situ FTIR monitoring. *Vibrational Spectroscopy*, 103558. <https://doi.org/10.1016/j.vibspec.2023.103558>
- Nolan, S. P., Guillet, S. G., Hashim, I. I., Beliš, M., Van Hecke, K., & Cazin, C. S. (2023). Mechanistic insights into the synthesis of [Rh(acac)(CO)(NHC)] (NHC = N-heterocyclic carbene) complexes using a weak base. *European Journal of Inorganic Chemistry*. <https://doi.org/10.1002/ejic.202300327>
- Schiller, C., Sieh, D., Lindenmaier, N., Stephan, M., Junker, N., Reijerse, E. J., Granovsky, A. A., & Burger, P. (2023). Cleavage of an Aromatic C–C Bond in Ferrocene by Insertion of an Iridium Nitrido Nitrogen Atom. *Journal of the American Chemical Society*, 145(20), 11392–11401. <https://doi.org/10.1021/jacs.3c02781>
- Tran, R., Canote, C. A., & Kilyanek, S. M. (2023). Mechanistic Studies of the Deoxydehydration of Polyols Catalyzed by a Mo(VI) Dioxo(pyridine-2,6-dicarboxylato) Complex. *Organometallics*. <https://doi.org/10.1021/acs.organomet.3c00001>
- Zhang, Y., Ni, L., Yao, H., Chen, Q., Jiang, J., Shu, C., Chen, Z., Li, C., & Zhu, W. (2023). Reaction mechanism and process safety assessment of acid-catalyzed synthesis of tert-butyl peracetate. *Journal of Loss Prevention in the Process Industries*, 81, 104944. <https://doi.org/10.1016/j.jlp.2022.104944>
- Davis, C. R., Fu, Y., Liu, P., & Ready, J. M. (2022). Mechanistic Basis for the Iridium-Catalyzed Enantioselective Allylation of Alkenyl Boronates. *Journal of the American Chemical Society*, 144(35), 16118–16130. <https://doi.org/10.1021/jacs.2c06493>

Mechanism

- Du, C., Wang, Y., Deng, J., & Luo, G. (2022). Organocatalyzed Beckmann Rearrangement of Cyclohexanone Oxime by Trifluoroacetic Anhydride in Microreactors. *Industrial & Engineering Chemistry Research*.
<https://doi.org/10.1021/acs.iecr.2c01078>
- Hu, Y., Zhang, Y., Fu, X., Tang, D., Li, H., Hu, P., Zhu, L., & Hu, C. (2022). Insights into the NaCl-Induced Formation of Soluble Humins during Fructose Dehydration to 5-Hydroxymethylfurfural. *Industrial & Engineering Chemistry Research*, 61(17), 5786–5796. <https://doi.org/10.1021/acs.iecr.2c00636>
- Mao, H., Huimin, X., Jin, M., Liu, J., Yao, Y., & Zhao, Y. (2022). An in-depth mechanistic study of the p-hydroxyphenylglycine synthetic process using in situ ATR-IR spectroscopy. *Analytical Methods*, 14(29), 2833–2840.
<https://doi.org/10.1039/d2ay00706a>
- Mulks, F. F., Ward, J. S., Bergmann, A. K., Wenz, P., Rissanen, K., Bormann, N., Hatz, W., & Burbaum, A. (2022). Diiminium Nucleophile Adducts are Stable and Convenient Lewis Superacids. *ChemRxiv*.
<https://doi.org/10.26434/chemrxiv-2022-r7rlv>
- Nolte, L., Nowaczyk, M., & Brandenbusch, C. (2022). Monitoring and investigating reactive extraction of (di-)carboxylic acids using online FTIR – Part I: Characterization of the complex formed between itaconic acid and tri-n-octylamine. *Journal of Molecular Liquids*, 352, 118721.
<https://doi.org/10.1016/j.molliq.2022.118721>
- Wang, G., Yan, X., Yin, J., Yin, Z., Wei, J., & Xi, Z. (2022). Cobalt Cyclopentadienyl-Phosphine Dinitrogen Complexes. *Chemistry: European Journal*, 28(67). <https://doi.org/10.1002/chem.202202803>
- Wang, L., Zhou, Y., Su, Z., Zhang, F., Cao, W., Liu, X., & Feng, X. (2022). [3,3]-Sigmatropic Rearrangements of Naphthyl 1-Propargyl Ethers: para -Propargylation and Catalytic Asymmetric Dearomatization. *Angewandte Chemie*, 61(52). <https://doi.org/10.1002/anie.202211785>
- Buchanan, C. M., Guzman-Morales, E., & Wang, B. (2021). Regioselectively substituted cellulose benzoate propionates for compensation film in optical displays. *Carbohydrate Polymers*, 252, 117146.
<https://doi.org/10.1016/j.carbpol.2020.117146>

Mechanism

- Chae, Y., Min, S., Park, E., Lim, C., Cheon, C. H., Jeong, K., Kwak, K., & Cho, M. (2021). Real-Time Reaction Monitoring with In Operando Flow NMR and FTIR Spectroscopy: Reaction Mechanism of Benzoxazole Synthesis. *Analytical Chemistry*, 93(4), 2106–2113.
<https://doi.org/10.1021/acs.analchem.0c03852>
- Connor, C., DeForest, J. C., Dietrich, P., M, N., DO, Doyle, K., Eisenbeis, S. A., Greenberg, E., Griffin, S. F., Jones, B., Jones, K. N., Karmilowicz, M. J., Kumar, R., Lewis, C. A., McInturff, E., McWilliams, J. C., Mehta, R., Nguyen, B., Rane, A., Samas, B., . . . Webster, M. (2021). Development of a Nitrene-Type Rearrangement for the Commercial Route of the JAK1 Inhibitor Abrocitinib. *Organic Process Research & Development*, 25(3), 608–615.
<https://doi.org/10.1021/acs.oprd.0c00366>
- Dai, J., Yang, W., Zhang, S., Jia, L., Niu, Y., Cui, P., Li, Q., Zhou, L., & Yin, Q. (2021). Phase transformation among multiple hydrates of creatine phosphate sodium in solution and in the vapor: A distinction between solution- and solvent- mediated transformation. *Journal of Molecular Liquids*, 334, 116507.
<https://doi.org/10.1016/j.molliq.2021.116507>
- Gregg, Z. R., Glickert, E., Xu, R., & Diver, S. T. (2021). Ruthenium Removal Using Silica-Supported Aromatic Isocyanides. *Journal of Organometallic Chemistry*, 944, 121800.
<https://doi.org/10.1016/j.jorganchem.2021.121800>
- Guo, J., Liu, Y., Lin, X., Tang, T., Wang, B., Hu, P., Zhao, K., Song, F., & Shi, Z. (2021). Site-Selective C–C Cleavage of Benzocyclobutenones Enabled by a Blocking Strategy Using Nickel Catalysis. *Angewandte Chemie*, 60(35), 19079–19084. <https://doi.org/10.1002/anie.202106709>
- Howard, S., Di Maso, M. J., Shimabukuro, K., Burlow, N. P., Tan, D. Q., Fettinger, J. C., Malig, T. C., Hein, J. E., & Shaw, J. T. (2021). Mechanistic Investigation of Castagnoli–Cushman Multicomponent Reactions Leading to a Three-Component Synthesis of Dihydroisoquinolones. *Journal of Organic Chemistry*, 86(17), 11599–11607. <https://doi.org/10.1021/acs.joc.1c01163>
- Hutchinson, G., Alamillo-Ferrer, C., & Burés, J. (2021). Mechanistically Guided Design of an Efficient and Enantioselective Aminocatalytic α -Chlorination of Aldehydes. *Journal of the American Chemical Society*, 143(18), 6805–6809. <https://doi.org/10.1021/jacs.1c02997>

Mechanism

- Kolodziejczak, K., Stewart, A. J., Reissig, H., & Murphy, J. (2021). Radical and Ionic Mechanisms in Rearrangements of o-Tolyl Aryl Ethers and Amines Initiated by the Grubbs–Stoltz Reagent, Et₃SiH/KOtBu. *Molecules*, 26(22), 6879. <https://doi.org/10.3390/molecules26226879>
- Redden, B. K., Clark, R. S. B., Gong, Z., Rahman, M. M., Peryshkov, D. V., & Wiskur, S. L. (2021). Mechanistic investigations of alcohol silylation with isothiourea catalysts. *Organic and Biomolecular Chemistry*.
<https://doi.org/10.1039/dlob01732b>
- Yang, H. R., Macha, L., Ha, H., & Yang, J. D. (2021). Functionalisation of esters via 1,3-chelation using NaOtBu: mechanistic investigations and synthetic applications. *Organic Chemistry Frontiers*, 8(1), 53–60.
<https://doi.org/10.1039/d0qo01135e>
- Bennett, S., Fawcett, A., Denton, E. H., Biberger, T., Fasano, V., Winter, N., & Aggarwal, V. K. (2020). Difunctionalization of C–C σ-Bonds Enabled by the Reaction of Bicyclo[1.1.0]butyl Boronate Complexes with Electrophiles: Reaction Development, Scope, and Stereochemical Origins. *Journal of the American Chemical Society*, 142(39), 16766–16775.
<https://doi.org/10.1021/jacs.0c07357>
- Chen, W., Cuenca, A. B., & Shafir, A. (2020). The Power of Iodane-Guided C–H Coupling: A Group-Transfer Strategy in Which a Halogen Works for Its Money. *Angewandte Chemie*, 59(38), 16294–16309.
<https://doi.org/10.1002/anie.201908418>
- Choi, G., Kim, H., Hwang, S., Jang, H., & Chung, W. (2020). Phosphorus(III)-Mediated, Tandem Deoxygenative Geminal Chlorofluorination of 1,2-Diketones. *Organic Letters*, 22(11), 4190–4195.
<https://doi.org/10.1021/acs.orglett.0c01258>
- Foth, P. J., Malig, T. C., Yu, H., Bolduc, T. G., Hein, J. E., & Sammis, G. M. (2020). Halide-Accelerated Acyl Fluoride Formation Using Sulfuryl Fluoride. *Organic Letters*, 22(16), 6682–6686.
<https://doi.org/10.1021/acs.orglett.0c02566>
- Kariofillis, S. K., Shields, B. J., Tekle-Smith, M. A., Zacuto, M. J., & Doyle, A. G. (2020). Nickel/Photoredox-Catalyzed Methylation of (Hetero)aryl Chlorides Using Trimethyl Orthoformate as a Methyl Radical Source. *Journal of the American Chemical Society*, 142(16), 7683–7689.
<https://doi.org/10.1021/jacs.0c02805>

Mechanism

- Li, S., & Wang, J. (2020). Cu(I)/Chiral Bisoxazoline-Catalyzed Enantioselective Sommelet–Hauser Rearrangement of Sulfonium Ylides. *Journal of Organic Chemistry*, 85(19), 12343–12358. <https://doi.org/10.1021/acs.joc.0c01590>
- Malig, T. C., Yunker, L. P. E., Steiner, S., & Hein, J. E. (2020). Online High-Performance Liquid Chromatography Analysis of Buchwald–Hartwig Aminations from within an Inert Environment. *ACS Catalysis*, 10(22), 13236–13244. <https://doi.org/10.1021/acscatal.0c03530>
- Rice, D. B., Grottemeyer, E. N., Donovan, A. M., & Jackson, T. A. (2020). Effect of Lewis Acids on the Structure and Reactivity of a Mononuclear Hydroxomanganese(III) Complex. *Inorganic Chemistry*, 59(5), 2689–2700. <https://doi.org/10.1021/acs.inorgchem.9b02980>
- Serrano-Maldonado, A., Dang-Bao, T., Favier, I., Guerrero-Ríos, I., Pla, D., & Gómez, M. (2020). Glycerol Boosted Rh-Catalyzed Hydroaminomethylation Reaction: A Mechanistic Insight. *Chemistry: A European Journal*, 26(55), 12553–12559. <https://doi.org/10.1002/chem.202001978>

Membrane

- Horvath-Gerber, F., Hii, K. K., Holtze, C., Deublein, E. J. C., & Hellgardt, K. (2023). Mass Transport of Diazomethane across Teflon AF2400 Membrane for Scale-Up Development. *Organic Process Research & Development*, 27(5), 899–909. <https://doi.org/10.1021/acs.oprd.3c00023>
- Mazumder, A., Kim, J. H., Hunter, B., & Beckingham, B. S. (2022). Controlling Fractional Free Volume, Transport, and Co-Transport of Alcohols and Carboxylate Salts in PEGDA Membranes. *Membranes*, 13(1), 17. <https://doi.org/10.3390/membranes13010017>
- Zheng, F., Qu, J., & Sun, Z. (2022). Preparation of nanocomposite aromatic polyamide reverse osmosis membranes by in-situ polymerization of bis(triethoxysilyl)ethane (BTESE). *Journal of Membrane Science*, 661, 120914. <https://doi.org/10.1016/j.memsci.2022.120914>
- Kim, J. H., & Beckingham, B. S. (2021). Comonomer effects on co-permeation of methanol and acetate in cation exchange membranes. *European Polymer Journal*, 147, 110307. <https://doi.org/10.1016/j.eurpolymj.2021.110307>
- Kim, J. H., & Beckingham, B. S. (2021). Transport and co-transport of carboxylate ions and alcohols in cation exchange membranes. *Journal of Polymer Science*, 59(21), 2545–2558. <https://doi.org/10.1002/pol.20210383>
- Kim, J. H., Lin, Y., Hunter, B., & Beckingham, B. S. (2021). Transport and Co-Transport of Carboxylate Ions and Ethanol in Anion Exchange Membranes. *Polymers*, 13(17), 2885. <https://doi.org/10.3390/polym13172885>
- Kim, J. H., Wang, Y., Lin, Y., Yoon, J., Huang, T. C., Kim, D., Auad, M. L., & Beckingham, B. S. (2021). Fabrication and Characterization of Cross-Linked Phenyl-Acrylate-Based Ion Exchange Membranes and Performance in a Direct Urea Fuel Cell. *Industrial & Engineering Chemistry Research*, 60(41), 14856–14867. <https://doi.org/10.1021/acs.iecr.1c02798>
- Landsman, M. R., Rivers, F., Pedretti, B. J., Freeman, B. D., Lawler, D. F., Lynd, N. A., & Katz, L. E. (2021). Boric acid removal with polyol-functionalized polyether membranes. *Journal of Membrane Science*, 638, 119690. <https://doi.org/10.1016/j.memsci.2021.119690>

Membrane

- Soniat, M., Dischinger, S. M., Weng, L., Beltran, H. M., Weber, A. Z., Miller, D., & Houle, F. A. (2021). Toward predictive permeabilities: Experimental measurements and multiscale simulation of methanol transport in Nafion. *Journal of Polymer Science*, 59(7), 594–613.
<https://doi.org/10.1002/pol.20200771>
- Kim, J. H., Dobyns, B. M., Zhao, R., & Beckingham, B. S. (2020). Multicomponent transport of methanol and acetate in a series of crosslinked PEGDA-AMPS cation exchange membranes. *Journal of Membrane Science*, 614, 118486. <https://doi.org/10.1016/j.memsci.2020.118486>

Organometallic Chemistry

- Bayer, U., Jenner, A., Riedmaier, J., & Anwander, R. (2021). Effect of Substituents of Cerium Pyrazolates and Pyrrolates on Carbon Dioxide Activation. *Molecules*, 26(7), 1957.
<https://doi.org/10.3390/molecules26071957>
- Coles, N. T., Gasperini, D., Provis-Evans, C. B., Mahon, M. F., & Webster, R. (2021). Heterobimetallic Complexes of 1,1-Diphosphineamide Ligands. *Organometallics*, 40(2), 148–155.
<https://doi.org/10.1021/acs.organomet.0c00662>

PAT

- Kukor, A. (2023). Leveraging novel process analytical technologies to access chiral small molecule drug precursors via dynamic crystallization. UBC Library Open Collections. <https://doi.org/10.14288/1.0432799>
- Sato, Y. (2023). Development of process analytical technologies and application for complicated reaction conditions. UBC Library Open Collections. <https://doi.org/10.14288/1.0423046>
- Magano, J. (2022). Large-Scale Amidations in Process Chemistry: Practical Considerations for Reagent Selection and Reaction Execution. *Organic Process Research & Development*, 26(6), 1562–1689.
<https://doi.org/10.1021/acs.oprd.2c00005>
- Ralbovsky, N. M., & Smith, J. A. (2022). Process analytical technology and its recent applications for asymmetric synthesis. *Talanta*, 252, 123787.
<https://doi.org/10.1016/j.talanta.2022.123787>
- Kukor, A. J., Guy, M. A., Hawkins, J. M., & Hein, J. E. (2021). A robust new tool for online solution-phase sampling of crystallizations. *Reaction Chemistry and Engineering*, 6(11), 2042–2049.
<https://doi.org/10.1039/d1re00284h>
- Smith, J. A., Obligacion, J. V., Dance, Z. E. X., Lomont, J. P., Ralbovsky, N. M., Bu, X., & Mann, B. F. (2021). Investigation of Lithium Acetyl Phosphate Synthesis Using Process Analytical Technology. *Organic Process Research & Development*, 25(6), 1402–1413. <https://doi.org/10.1021/acs.oprd.1c00091>
- Dance, Z. E. X., Crawford, M., Moment, A., Brunskill, A. P. J., & Wabuyele, B. (2020). Kinetics, Thermodynamics, and Scale-Up of an Azeotropic Drying Process: Mapping Rapid Phase Conversion with Process Analytical Technology. *Organic Process Research & Development*, 24(9), 1665–1674. <https://doi.org/10.1021/acs.oprd.0c00275>
- Rodrigues, K. C., Veloso, I. I. K., Ribeiro, M. L., Cruz, A. a. V. E., & Badino, A. C. (2020). Mid-infrared spectroscopy as a tool for real-time monitoring of ethanol absorption in glycols. *Canadian Journal of Chemical Engineering*, 99(1), 401–409. <https://doi.org/10.1002/cjce.23849>

Photocatalysis

- Reich, D., Noble, A. J., & Aggarwal, V. K. (2022). Facile Conversion of α -Amino Acids into α -Amino Phosphonates by Decarboxylative Phosphorylation using Visible-Light Photocatalysis. *Angewandte Chemie*, 61(37). <https://doi.org/10.1002/anie.202207063>
- Gonda, Z., Földesi, T., Nagy, B., & Novák, Z. (2021). Modular Synthesis of Carbazole-Substituted Phthalimides as Potential Photocatalysts. *Synthesis*, 54(17), 3771–3784. <https://doi.org/10.1055/a-1647-7292>

Polymerization

- Bernhard, Y., Van Guyse, J. F. R., Purino, M., & Hoogenboom, R. (2023). Direct synthesis of poly(N-alkyl acrylamide) (co)polymers with pendant reactive amino groups by organocatalyzed amidation of polymethylacrylate. *European Polymer Journal*, 192, 112077. <https://doi.org/10.1016/j.eurpolymj.2023.112077>
- Cao, J., Lin, Y., Zhou, T., Wang, W., Zhang, Q., Pan, B., & Jiang, W. (2023). Molecular Oxygen-Assisted in Defect-Rich ZnO for Catalytic Depolymerization of Polyethylene Terephthalate. *iScience*. <https://doi.org/10.1016/j.isci.2023.107492>
- Hamulić, D., Medoš, G., Korte, D., Rodič, P., & Milošev, I. (2023). The Effect of Curing Temperature and Thickness of Polybutyl Methacrylate Siloxane Coatings on the Corrosion Protection of Structural Steel S355. *Coatings*, 13(4), 675. <https://doi.org/10.3390/coatings13040675>
- He, D., Gui, X., Dong, Y., Lin, S., Tu, Y., Hu, J., Li, S., & Zhao, J. (2023). An efficient catalytic and solvent-free method for the synthesis of mono-organofunctionalized polymethylhydrosiloxane derivatives. *Polymers for Advanced Technologies*, 34(6), 1979–1989. <https://doi.org/10.1002/pat.6025>
- Kordes, B. R., Ascherl, L., Rüdinger, C., Melchin, T., & Agarwal, S. (2023). Competition between Hydrolysis and Radical Ring-Opening Polymerization of MDO in Water. Who Makes the Race? *Macromolecules*, 56(3), 1033–1044. <https://doi.org/10.1021/acs.macromol.2c01653>
- Nguyen, T., Shamsabadi, A. A., & Bavarian, M. (2023). Coupling ATR-FTIR spectroscopy with multivariate analysis for polymers manufacturing and control of polymers' molecular weight. *Digital Chemical Engineering*, 7, 100089. <https://doi.org/10.1016/j.dche.2023.100089>
- Sorensen, C. C., Kozuszek, C. T., Borden, M. A., & Leibfarth, F. A. (2023). Asymmetric Ion-Pairing in Stereoselective Vinyl Polymerization. *ACS Catalysis*, 13(5), 3272–3284. <https://doi.org/10.1021/acscatal.3c00040>
- Yan, Z., Wang, Y., Xu, D., Yang, J., Wang, X., Luo, T., & Zhang, Z. (2023). Hydrolysis Mechanism of Water-Soluble Ammonium Polyphosphate Affected by Zinc Ions. *ACS Omega*, 8(20), 17573–17582. <https://doi.org/10.1021/acsomega.2c07642>

Polymerization

- Gao, Z., Gao, B., Yanchuan, Z., & Pang, X. (2022). Degradable terpolyesters synthesized from a monomer mixture mediated by a heterometallic complex: Defined monomer- and stereo-sequences. *Polymer*, 263, 125536.
<https://doi.org/10.1016/j.polymer.2022.125536>
- Kozakiewicz, J., Trzaskowska, J., Kędzierski, M., Sołtysiak, J., Stolarszyk, E. U., Ofat-Kawalec, I., & Przybylski, J. (2022). Cationic Emulsion Polymerization of Octamethylcyclotetrasiloxane (D4) in Mixtures with Alkoxy silanes. *Molecules*, 27(3), 605.
<https://doi.org/10.3390/molecules27030605>
- Laiwattanapaisarn, N., Virachotikul, A., Chumsaeng, P., Jaenjai, T., & Phomphrai, K. (2022). Ring-Opening Co- and Terpolymerization of Epoxides, Cyclic Anhydrides, and L-Lactide Using Constrained Aluminum Inden Complexes. *Inorganic Chemistry*, 61(50), 20616–20628.
<https://doi.org/10.1021/acs.inorgchem.2c03532>
- Li, B., Zhang, Y., Zhu, X., Li, Z., Li, Z., Qiu, H., & Wu, G. (2022). Poly(ether ester) and related block copolymers via organocatalytic ring-opening polymerization. *Journal of Polymer Science*, 60(24), 3341–3353.
<https://doi.org/10.1002/pol.20210820>
- Mehringer, K. D., Davis, B., Kemp, L. K., Ma, G., Hunt, S. E., Storey, R. F., Gu, X., Thornell, T. L., Wedgeworth, D. N., Simon, Y. C., & Morgan, S. E. (2022). Synthesis and Morphology of High-Molecular-Weight Polyisobutylene–Polystyrene Block Copolymers Containing Dynamic Covalent Bonds. *Macromolecular Rapid Communications*, 43(24), 2200487.
<https://doi.org/10.1002/marc.202200487>
- Milošev, I., Hamulić, D., Rodič, P., Carrière, C., Zanna, S., Budasheva, H., Korte, D., Franko, M., Mercier, D., Seyeux, A., & Marcus, P. (2022). Siloxane polyacrylic sol-gel coatings with alkly and perfluoroalkyl chains: Synthesis, composition, thermal properties and long-term corrosion protection. *Applied Surface Science*, 574, 151578. <https://doi.org/10.1016/j.apsusc.2021.151578>
- Naserifar, S., Kuijpers, P. F., Wojno, S., Kádár, R., Bernin, D., & Hasani, M. (2022). In situ monitoring of cellulose etherification in solution: probing the impact of solvent composition on the synthesis of 3-allyloxy-2-hydroxypropyl-cellulose in aqueous hydroxide systems. *Polymer Chemistry*, 13(28), 4111–4123. <https://doi.org/10.1039/d2py00231k>

Polymerization

- Siefker, D. (n.d.). Moisture-Tolerant and Operationally Simple Synthesis of Synthetic Polypeptides and Polypeptoids by Ring-Opening Polymerization of N-Thiocarboxyanhydrides. LSU Digital Commons.
https://digitalcommons.lsu.edu/gradschool_dissertations/5738/
- Xu, K., Fan, B., Putera, K., Wawryk, M., Wan, J., Peng, B., Holl, M. M. B., Patti, A. F., & Thang, S. H. (2022). Nanoparticle Surface Cross-Linking: A Universal Strategy to Enhance the Mechanical Properties of Latex Films. *Macromolecules*, 55(13), 5301–5313.
<https://doi.org/10.1021/acs.macromol.2c00688>
- Xu, X., Zhang, Y., Wen, J., Zhang, Z., Ting, X., Yu, D., Wu, X., Yao, Q., Fan, J., & Peng, X. (2022). Large-area, daily, on-site-applicable antiadhesion coatings formed via ambient self-crosslinking. *Chemical Engineering Journal*, 450, 138156. <https://doi.org/10.1016/j.cej.2022.138156>
- Zeng, X., Wang, L., Cao, Y., Liu, C., Han, Z., He, P., & Li, H. (2022). Synthesis of poly(1,2-butylene oxide-stat-tetrahydrofuran) by controllable polymerization over $\text{Sc}(\text{OTf})_3$ for use in high-performance lubricating oil. *European Polymer Journal*, 179, 111483. <https://doi.org/10.1016/j.eurpolymj.2022.111483>
- Zhang, Y., Lai, W., Xie, S. Q., Zhou, H., & Lu, X. (2022). Facile synthesis, structure and properties of CO₂-sourced poly(thioether-co-carbonate)s containing acetyl pendants via thio-ene click polymerization. *Polymer Chemistry*, 13(2), 201–208. <https://doi.org/10.1039/d1py01477c>
- Zhao, B., Li, J., Xiu, Y., Pan, X., Zhang, Z., & Zhu, J. (2022). Xanthate-Based Photoiniferter RAFT Polymerization toward Oxygen-Tolerant and Rapid Living 3D Printing. *Macromolecules*, 55(5), 1620–1628.
<https://doi.org/10.1021/acs.macromol.1c02521>
- Zhou, X., Xu, D., Xu, D., Yan, Z., Zhang, Z., Zhong, B., & Wang, X. (2022). Solid–Liquid Phase Equilibrium of Ammonium Dihydrogen Phosphate and Agricultural Grade Ammonium Polyphosphate (Degree of Polymerization Ranging from 1 to 8) for Mixed Irrigation Strategy. *ACS Omega*, 7(40), 35885–35900. <https://doi.org/10.1021/acsomega.2c04534>
- Cegłowski, M., Marien, Y. W., Smeets, S., De Smet, L., D’hooge, D. R., Schroeder, G., & Hoogenboom, R. (2021). Molecularly Imprinted Polymers with Enhanced Selectivity Based on 4-(Aminomethyl)pyridine-Functionalized Poly(2-oxazoline)s for Detecting Hazardous Herbicide Contaminants. *Chemistry of Materials*, 34(1), 84–96.
<https://doi.org/10.1021/acs.chemmater.1c02813>

Polymerization

- Chen, C., Gnanou, Y., & Feng, X. (2021). Alternating Copolymerization of Epoxides with Isothiocyanates. *Macromolecules*, 54(20), 9474–9481.
<https://doi.org/10.1021/acs.macromol.1c01460>
- De Silva, E. H., & Novak, B. M. (2021). Synthesis of helical branched carbodiimide polymers with liquid crystalline properties. *Liquid Crystals*, 49(1), 99–110. <https://doi.org/10.1080/02678292.2021.1945695>
- De Silva, E. H., & Novak, B. M. (2021). Temperature induced helical contraction and expansion in branched polycarbodiimides and their solvent vapor sensing properties. *Journal of Macromolecular Science, Part A*, 59(1), 11–19. <https://doi.org/10.1080/10601325.2021.1978849>
- Fan, P., Xue, C., Zhou, X., Yang, Z., & Ji, H. (2021). Dynamic Covalent Bonds of Si-OR and Si-OSi Enabled A Stiff Polymer to Heal and Recycle at Room Temperature. *Materials*, 14(10), 2680. <https://doi.org/10.3390/ma14102680>
- Khalili, K. N. M., De Peinder, P., Donkers, J., Gosselink, R. J., Bruijnincx, P. C. A., & Weckhuysen, B. M. (2021). Monitoring Molecular Weight Changes during Technical Lignin Depolymerization by Operando Attenuated Total Reflectance Infrared Spectroscopy and Chemometrics. *ChemSusChem*, 14(24), 5517–5524. <https://doi.org/10.1002/cssc.202101853>
- Köhler, M., Rinke, P., Fiederling, K., Görls, H., Ueberschaar, N., Schacher, F. H., & Kretschmer, R. (2021). Catalytic Activity of Various β -Diketiminate Zinc Complexes toward the Ring-Opening Polymerization of Caprolactone and Derivatives. *Macromolecular Chemistry and Physics*, 222(18), 2100187.
<https://doi.org/10.1002/macp.202100187>
- Liu, L., Bessler, K., Chen, S., Cho, M., Hua, Q., & Renneckar, S. (2021). In-situ real-time monitoring of hydroxyethyl modification in obtaining uniform lignin derivatives. *European Polymer Journal*, 142, 110082.
<https://doi.org/10.1016/j.eurpolymj.2020.110082>
- Sayko, R., Tian, Y., Liang, H., & Dobrynin, A. V. (2021). Charged Polymers: From Polyelectrolyte Solutions to Polyelectrolyte Complexes. *Macromolecules*, 54(15), 7183–7192. <https://doi.org/10.1021/acs.macromol.1c01171>
- Seidl, R., Weiss, S. E., Kessler, R. W., Kessler, W., Zikulinig-Rusch, E., & Kandelbauer, A. (2021). Prediction of Residual Curing Capacity of Melamine-Formaldehyde Resins at an Early Stage of Synthesis by In-Line FTIR Spectroscopy. *Polymers*, 13(15), 2541.
<https://doi.org/10.3390/polym13152541>

Polymerization

- Wang, L., Zhang, F., Liu, Y., Du, S., & Leng, J. (2021). Photosensitive Composite Inks for Digital Light Processing Four-Dimensional Printing of Shape Memory Capture Devices. *ACS Applied Materials & Interfaces*, 13(15), 18110–18119. <https://doi.org/10.1021/acsam.i.1c02624>
- Xu, J., Wang, X., & Hadjichristidis, N. (2021). Diblock dialternating terpolymers by one-step/one-pot highly selective organocatalytic multimonomer polymerization. *Nature Communications*, 12(1). <https://doi.org/10.1038/s41467-021-27377-3>
- Zeng, Y., Li, J., Liu, S., & Yang, B. (2021). Rosin-Based Epoxy Vitrimers with Dynamic Boronic Ester Bonds. *Polymers*, 13(19), 3386. <https://doi.org/10.3390/polym13193386>
- Zhang, Y., Yang, L., Xie, R., Yang, G., & Wu, G. (2021). Perfectly Alternating Copolymerization of CO and Epoxides to Aliphatic Polyester Oligomers via Cooperative Organoboron–Cobalt Complexes. *Macromolecules*, 54(20), 9427–9436. <https://doi.org/10.1021/acs.macromol.1c01324>
- Barroso, R. G. M. R., Gonçalves, S., & Machado, F. (2020). A novel approach for the synthesis of lactic acid-based polymers in an aqueous dispersed medium. *Sustainable Chemistry and Pharmacy*, 15, 100211. <https://doi.org/10.1016/j.scp.2019.100211>
- Dobyns, B. M., Kim, J. H., Li, J., Jiang, Z., & Beckingham, B. S. (2020). Multicomponent transport of alcohols in Nafion 117 measured by in situ ATR FTIR spectroscopy. *Polymer*, 209, 123046. <https://doi.org/10.1016/j.polymer.2020.123046>
- Holbrook, T. P., & Storey, R. F. (2020). Micellization and Adsorption to Carbon Black of Polyisobutylene-Based Ionic Liquids. *Journal of Polymer Science*, 58(2), 280–299. <https://doi.org/10.1002/pol.20190017>
- Li, B., Qin, A., & Tang, B. Z. (2020). Metal-free polycycloaddition of aldehyde-activated internal diarynes and diazides toward post-functionalizable poly(formyl-1,2,3-triazole)s. *Polymer Chemistry*, 11(17), 3075–3083. <https://doi.org/10.1039/d0py00193g>
- Parada, C. M., Yang, B., Campbell, C. A., & Storey, R. F. (2020). Synthesis, characterization, and photopolymerization of (meth)acrylate-functional polyisobutylene macromers produced by cleavage/alkylation of butyl rubber. *Journal of Polymer Science*. <https://doi.org/10.1002/pol.20200524>

Polymerization

- Rodič, P., Korošec, R. C., Kapun, B., Mertelj, A., & Milošev, I. (2020). Acrylate-Based Hybrid Sol-Gel Coating for Corrosion Protection of AA7075-T6 in Aircraft Applications: The Effect of Copolymerization Time. *Polymers*, 12(4), 948. <https://doi.org/10.3390/polym12040948>
- Rodič, P., Korošec, R. C., Kapun, B., Mertelj, A., & Milošev, I. (2020). Acrylate-Based Hybrid Sol-Gel Coating for Corrosion Protection of AA7075-T6 in Aircraft Applications: The Effect of Copolymerization Time. *Polymers*, 12(4), 948. <https://doi.org/10.3390/polym12040948>
- Stadler, B., Tin, S., Kux, A., Grauke, R., Koy, C., Tiemersma-Wegman, T. D., Hinze, S., Beck, H. P., Glocker, M. O., Brandt, A., & De Vries, J. G. (2020). Co-Oligomers of Renewable and “Inert” 2-MeTHF and Propylene Oxide for Use in Bio-Based Adhesives. *ACS Sustainable Chemistry & Engineering*, 8(35), 13467–13480. <https://doi.org/10.1021/acssuschemeng.0c04450>
- Stahl, S., & Luinstra, G. A. (2020). DMC-Mediated Copolymerization of CO₂ and PO—Mechanistic Aspects Derived from Feed and Polymer Composition. *Catalysts*, 10(9), 1066. <https://doi.org/10.3390/catal10091066>
- Thames, S. F., Blanton, M. R., Williams, E., White, J. A., Stoner, K., & Ong, K. L. (2020). Implantation Time Has No Effect on the Morphology and Extent of Previously Reported “Degradation” of Prolene Pelvic Mesh. *Female Pelvic Medicine & Reconstructive Surgery*. <https://doi.org/10.1097/spv.0000000000000837>

Quantitation

- Farouk, F., Hathout, R. M., & Elkady, E. F. (2023). Resolving analytical challenges in pharmaceutical process monitoring using multivariate analysis methods: applications in process understanding, control, and improvement. *Spectroscopy*, 22–29. <https://doi.org/10.56530/spectroscopy.op4571n3>
- Zanone, A., Tavares, D. C., & De Paiva, J. L. (2022). Quantitative Speciation of The Liquid Phase by FTIR Spectroscopy in the System AMP-PZ-CO₂-H₂O. *Química Nova*. <https://doi.org/10.21577/0100-4042.20170883>
- Hutchinson, G., Welsh, C. D. M., & Burés, J. (2021). Use of Standard Addition to Quantify In Situ FTIR Reaction Data. *Journal of Organic Chemistry*, 86(2), 2012–2016. <https://doi.org/10.1021/acs.joc.0c02684>
- Kocevska, S., Maggioni, G. M., Rousseau, R., & Grover, M. A. (2021). Spectroscopic Quantification of Target Species in a Complex Mixture Using Blind Source Separation and Partial Least-Squares Regression: A Case Study on Hanford Waste. *Industrial & Engineering Chemistry Research*, 60(27), 9885–9896. <https://doi.org/10.1021/acs.iecr.1c01387>
- Provis-Evans, C. B., Farrar, E. H. E., Grayson, M., Webster, R., & Hill, A. D. (2020). Highly Sensitive Real-Time Isotopic Quantification of Water by ATR-FTIR. *Analytical Chemistry*, 92(11), 7500–7507. <https://doi.org/10.1021/acs.analchem.9b05635>

Safety

- Armstrong, B. M., Behre, T., Turnbull, B. W. H., Bishara, D., Hartmanshenn, C., McCarthy, E., Whittington, M., Ji, Y., Jenks, A., Desmond, R., Muzzio, D. J., Corry, J., Zhao, R., Kuhl, N., & Chung, C. K. (2023). Integrating Process Development and Safety Analysis for Scale-Up of a Diborane-Generating Reduction Reaction. *Organic Process Research & Development*, 27(4), 763–774. <https://doi.org/10.1021/acs.oprd.3c00018>
- Ni, L., Yang, D., Liu, Y., Li, C., Chen, Q., Jiang, J., & Pan, Y. (2023). Preparation of n-Octadecane@MF resin microPCMs and its application in temperature control of esterification reactions. *Journal of Loss Prevention in the Process Industries*, 81, 104971. <https://doi.org/10.1016/j.jlp.2023.104971>
- Quan, Y., Parker, T. F., Hua, Y., Jeong, H., & Wang, Q. (2023). Process Elucidation and Hazard Analysis of the Metal–Organic Framework Scale-Up Synthesis: A Case Study of ZIF-8. *Industrial & Engineering Chemistry Research*, 62(12), 5035–5041. <https://doi.org/10.1021/acs.iecr.2c04570>
- Lathrop, S. P., Mlinar, L., Manjrekar, O. N., Zhou, Y., Harper, K. C., Sacia, E. R., Higgins, M., Bogdan, A., Wang, Z., Richter, S. M., Gong, W., Voight, E. A., Henle, J. J., Diwan, M., Kallemeyn, J. M., Sharland, J. C., Wei, B., & Davies, H. M. L. (2022). Continuous Process to Safely Manufacture an Aryldiazoacetate and Its Direct Use in a Dirhodium-Catalyzed Enantioselective Cyclopropanation. *Organic Process Research & Development*, 27(1), 90–104. <https://doi.org/10.1021/acs.oprd.2c00288>
- Parker, T., Mao, Y., & Wang, Q. (2022). Application of response surface methodology for hazard analysis of 2-butanol oxidation to 2-butanone using RC1 calorimetry. *Journal of Loss Prevention in the Process Industries*, 75, 104703. <https://doi.org/10.1016/j.jlp.2021.104703>
- Yao, H., Wan, L., Guo, Y., Mao, Y., & Xin, Z. (2022). Thermal and Kinetic Research on a Highly Exothermic Condensation Reaction by Powerful Calorimeters. *Organic Process Research & Development*, 26(5), 1365–1377. <https://doi.org/10.1021/acs.oprd.1c00396>
- Allian, A., Flanagan, R., Mentzer, R. A., Sperry, J. B., Xue, T., & Zhao, R. (2021). Precompetitive Collaborations in the Pharmaceutical Industry: Process Safety Groups Work Together to Reduce Hazards, from R&D Laboratories to Manufacturing Facilities. *ACS Chemical Health & Safety*. <https://doi.org/10.1021/acs.chas.1c00049>

Safety

- Bispo, F. J. S., Kartnaller, V., & Da Silva, J. F. C. (2021). pH-Based Control of the Kinetics and Process Safety of the Highly Exothermic Reaction Between Ammonium Chloride and Sodium Nitrite for Flow-Assurance Applications. *SPE Journal*, 26(06), 3634–3642. <https://doi.org/10.2118/205389-pa>
- Cheng, Z., Ni, L., Wang, J., Jiang, J., Yao, H., Chen, Q., Cui, F., Jiang, W., & Ye, S. (2021). Process hazard evaluation and exothermic mechanism for the synthesis of n-butylmagnesium bromide Grignard reagent in different solvents. *Chemical Engineering Research & Design*, 147, 654–673. <https://doi.org/10.1016/j.psep.2020.12.041>
- Li, Z., Cheng, C., Ming, X., Cong, Y., Li, Q., Wei, Z., & Ma, X. (2021). A Study on the Reaction Mechanisms and Process Safety of Pyrisoaxazole Synthesis. *Organic Process Research & Development*. <https://doi.org/10.1021/acs.oprd.1c00254>
- Muir, R., G, B. J., Pearsall, A., Jorgensen, M. J., Sims, B., Yonoski, K., Mehta, N., & Salan, J. S. (2021). Development of a Safe Continuous Process to Sodium Nitrotetrazolate via Solid Phase “Catch and Release.” *Organic Process Research & Development*, 25(8), 1882–1888. <https://doi.org/10.1021/acs.oprd.1c00129>
- Chen, Q., Ni, L., Jiang, J., Parker, T., Chen, Z., Cheng, Z., Jiang, W., & Wang, Q. (2020). Inhibition of exothermic runaway of batch reactors for the homogeneous esterification using nano-encapsulated phase change materials. *Applied Thermal Engineering*, 178, 115531. <https://doi.org/10.1016/j.applthermaleng.2020.115531>
- Hosoya, M., Nishijima, S., & Kurose, N. (2020). Management of the Heat of Reaction under Continuous Flow Conditions Using In-Line Monitoring Technologies. *Organic Process Research & Development*, 24(6), 1095–1103. <https://doi.org/10.1021/acs.oprd.0c00109>
- Ładosz, A., Kuhnle, C., & Jensen, K. F. (2020). Characterization of reaction enthalpy and kinetics in a microscale flow platform. *Reaction Chemistry and Engineering*, 5(11), 2115–2122. <https://doi.org/10.1039/dore00304b>

Sustainability

- Hu, Y., Li, H., Hu, P., Li, L., Wu, D., Xue, Z., Zhu, L., & Hu, C. (2023). Probing the effects of fructose concentration on the evolution of humins during fructose dehydration. *Reaction Chemistry and Engineering*, 8(1), 175–183. <https://doi.org/10.1039/d2re00324d>
- Liang, Y., Xiong, C., Zhou, X., Xue, C., & Ji, H. (2023). Preparation of Mo-based catalyst appreciated from agricultural waste for efficient high-value conversion of 1-hexene. *Chemical Engineering Journal*, 455, 140648. <https://doi.org/10.1016/j.cej.2022.140648>
- Perrone, S., Messa, F., & Salomone, A. (2023). Towards Green Reductions in Bio-Derived Solvents. *European Journal of Organic Chemistry*, 26(14). <https://doi.org/10.1002/ejoc.202201494>
- Riddell, A., Hynynen, J., Baena-Moreno, F., Achour, A., Westman, G., Parkås, J., & Bernin, D. (2023). Insights into Photosensitized Reactions for Upgrading Lignin. *ACS Sustainable Chemistry & Engineering*, 11(12), 4850–4859. <https://doi.org/10.1021/acssuschemeng.3c00097>
- Deadman, B. J., Gian, S., Lee, V. E. Y., Adrio, L. A., Hellgardt, K., & Hii, K. K. M. (2022). On-demand, *in situ*, generation of ammonium caroate (peroxymonosulfate) for the dihydroxylation of alkenes to vicinal diols. *Green Chemistry*. <https://doi.org/10.1039/d2gc00671e>
- Fu, X., Hu, Y., Hu, P., Li, H., Xu, S., Zhu, L., & Hu, C. (2022). Mapping out the reaction network of humin formation at the initial stage of fructose dehydration in water. *Green Energy & Environment*. <https://doi.org/10.1016/j.gee.2022.09.012>
- Hebrault, D., Rein, A. J., & Wittkamp, B. (2022). Chemical Knowledge via In Situ Analytics: Advancing Quality and Sustainability. *ACS Sustainable Chemistry & Engineering*, 10(16), 5072–5077. <https://doi.org/10.1021/acssuschemeng.2c00292>
- Horvat, M., & Iskra, J. (2022). Oxidative cleavage of C–C double bond in cinnamic acids with hydrogen peroxide catalysed by vanadium(V) oxide. *Green Chemistry*, 24(5), 2073–2081. <https://doi.org/10.1039/d1gc04416h>
- Hu, J., Cheng, C., Liu, X., Ming, X., Wei, Z., & Li, Q. (2022). Reaction mechanism of the green synthesis of glutaric acid. *RSC Advances*, 12(4), 2270–2275. <https://doi.org/10.1039/d1ra08650b>

Sustainability

- Stachowiak, W., Kaczmarek, D. K., Rzemieniecki, T., & Niemczak, M. (2022). Sustainable Design of New Ionic Forms of Vitamin B3 and Their Utilization as Plant Protection Agents. *Journal of Agricultural and Food Chemistry*, 70(27), 8222–8232. <https://doi.org/10.1021/acs.jafc.2c01807>
- Stachowiak, W., Smolibowski, M., Kaczmarek, D. K., Rzemieniecki, T., & Niemczak, M. (2022). Toward revealing the role of the cation in the phytotoxicity of the betaine-based esterquats comprising dicamba herbicide. *Science of the Total Environment*, 845, 157181. <https://doi.org/10.1016/j.scitotenv.2022.157181>
- Wu, M., Wang, H., Mao, H., Wang, C., Dong, Z., Tang, T., Zheng, W., Jin, L., & Liu, J. (2022). Solar-driven aromatic aldehydes: green production from mandelic acid derivatives by a Co(ii)/C3N4 combined catalyst in aqueous media. *RSC Advances*, 12(9), 5245–5254. <https://doi.org/10.1039/d1ra08256f>
- Zhang, S., Xu, W., Du, R., Zhou, X., Liu, X., Xu, S., & Wang, Y. (2022). Cosolvent-promoted selective non-aqueous hydrolysis of PET wastes and facile product separation. *Green Chemistry*, 24(8), 3284–3292. <https://doi.org/10.1039/d2gc00328g>
- Alfano, A. I., Brindisi, M., & Lange, H. (2021). Flow synthesis approaches to privileged scaffolds – recent routes reviewed for green and sustainable aspects. *Green Chemistry*, 23(6), 2233–2292. <https://doi.org/10.1039/d0gc03883k>
- Chen, H., Bai, Q., Liu, M., Wu, G., & Wang, Y. (2021). Ultrafast, cost-effective and scaled-up recycling of aramid products into aramid nanofibers: mechanism, upcycling, closed-loop recycling. *Green Chemistry*, 23(19), 7646–7658. <https://doi.org/10.1039/d1gc01805a>
- Gong, R., Cao, H., Zhang, H., Qiao, L., & Wang, X. (2021). UV-curable cationic waterborne polyurethane from CO₂-polyol with excellent water resistance. *Polymer*, 218, 123536. <https://doi.org/10.1016/j.polymer.2021.123536>
- Hladnik, L., Vicente, F. A., Novak, U., Grilc, M., & Likozar, B. (2021). Solubility assessment of lignin monomeric compounds and organosolv lignin in deep eutectic solvents using in situ Fourier-transform infrared spectroscopy. *Industrial Crops and Products*, 164, 113359. <https://doi.org/10.1016/j.indcrop.2021.113359>

Sustainability

- Hu, C., Huang, Z., Jiang, M., Tao, Y. X., Li, Z., Wu, X., Cheng, D., & Chen, F. (2021). Continuous-Flow Asymmetric Synthesis of (3R)-3-Hydroxyl-5-hexenoates with Co-Immobilized Ketoreductase and Lactobacillus kefir Dehydrogenase Integrating Greener Inline Microfluidic Liquid–Liquid Extractors and Membrane Separators. *ACS Sustainable Chemistry & Engineering*, 9(27), 8990–9000. <https://doi.org/10.1021/acssuschemeng.1c01419>
- Majewski, K., Myszograj, S., & Płuciennik-Koropczuk, E. (2021). Surface Morphology of a Microplastic as an Indicator of Its Microscale Degradation. *Civil and Environmental Engineering Reports*, 31(4), 196–213.
<https://doi.org/10.2478/ceer-2021-0057>
- Mao, H., Wang, H., Meng, T., Wang, C., Hu, X., Xiao, Z., & Liu, J. (2021). An efficient environmentally friendly CuFe2O4/SiO₂ catalyst for vanillyl mandelic acid oxidation in water under atmospheric pressure and a mechanism study. *New Journal of Chemistry*, 45(2), 982–992.
<https://doi.org/10.1039/d0nj04798h>
- Wu, X., Liao, Y., Bomon, J., Tian, G., Bai, S., Van Aelst, K., Zhang, Q., Vermandel, W., Wambacq, B., Maes, B. U. W., Yu, J., & Sels, B. F. (2021). Lignin-First Monomers to Catechol: Rational Cleavage of C–O and C–C Bonds over Zeolites. *Chemsuschem*, 15(7).
<https://doi.org/10.1002/cssc.202102248>
- Zang, D., Li, Q., Dai, G., Zeng, M., Huang, Y., & Wei, Y. (2021). Interface engineering of Mo₈/Cu heterostructures toward highly selective electrochemical reduction of carbon dioxide into acetate. *Applied Catalysis B: Environmental*, 281, 119426. <https://doi.org/10.1016/j.apcatb.2020.119426>
- Zou, W., Liu, X., Xue, C., Zhou, X., Yu, H., Fan, P., & Ji, H. (2021). Enhancement of the visible-light absorption and charge mobility in a zinc porphyrin polymer/g-C₃N₄ heterojunction for promoting the oxidative coupling of amines. *Applied Catalysis B: Environmental*, 285, 119863.
<https://doi.org/10.1016/j.apcatb.2020.119863>

Synthesis

- Bormann, N., Ward, J. S., Bergmann, A. K., Wenz, P., Rissanen, K., Hatz, W., Burbaum, A., & Mulks, F. F. (2023). Diiminium Nucleophile Adducts are Stable and Convenient Lewis Superacids. *ChemRxiv*.
<https://doi.org/10.26434/chemrxiv-2022-r7rlv-v2>
- Liu, L., Gu, Y., & Zhang, C. (2023). Recent Advances in the Synthesis and Transformation of Carbamoyl Fluorides, Fluoroformates, and Their Analogues. *Chemical Record*. <https://doi.org/10.1002/tcr.202300071>
- Metzger, C., Dolai, R., Reh, S., Kelm, H., Schmitz, M., Oelkers, B., Sawall, M., Neymeyr, K., & Krüger, H. (2023). A New Type of Valence Tautomerism in Cobalt Dioxolene Complexes – Temperature-Induced Transition from a Cobalt(III) Catecholate to a Low-Spin Cobalt(II) Semiquinonate State. *Chemistry: A European Journal*, 29(30).
<https://doi.org/10.1002/chem.202300091>
- Wagschal, S., Broggini, D., Cao, T. D., Schleiss, P., Paun, K., Steiner, J., Merk, A., Harsdorf, J., Fiedler, W., Schirling, S., Hock, S., Strittmatter, T., Dijkmans, J., Vervest, I., Van Hoegaerden, T., Egle, B., Mower, M. P., Liu, Z., Cao, Z., . . . Lemaire, S. (2023). Toward the Development of a Manufacturing Process for Milvexian: Scale-Up Synthesis of the Side Chain. *Organic Process Research & Development*. <https://doi.org/10.1021/acs.oprd.2c00399>
- Wang, C., Wang, H., Huang, C., Wu, C., & Sun, T. (2023). Precise Control of the Oxidation Reaction in a High-Purity Dexlansoprazole Synthesis Process Using In Situ Infrared. *Organic Process Research & Development*, 27(6), 1122–1128. <https://doi.org/10.1021/acs.oprd.3c00098>
- Wei, J., Xing, Y., Ye, X., Nguyen, B., Wojtas, L., Hong, X., & Shi, X. (2023). Gold-Catalyzed Amine Cascade Addition to Diyne-Ene: Enantioselective Synthesis of 1,2-Dihydropyridines. *Angewandte Chemie*.
<https://doi.org/10.1002/anie.202305409>
- Aiken, S., Bateman, J., Liao, H., Fawcett, A., Bootwicha, T., Vincetti, P., Myers, E. L., Noble, A. J., & Aggarwal, V. K. (2022). Iterative Synthesis of 1,3-Polyboronic Esters with High Stereocontrol: Applications to Bahamaolide A and Polyfunctionalised Hydrocarbons. *ChemRxiv*.
<https://doi.org/10.26434/chemrxiv-2022-g2h9s>

Synthesis

- Dagar, N., Singh, S., & Roy, S. (2022). Synergistic Effect of Cerium in Dual Photoinduced Ligand-to-Metal Charge Transfer and Lewis Acid Catalysis: Diastereoselective Alkylation of Coumarins. *The Journal of Organic Chemistry*, 87(14), 8970–8982. <https://doi.org/10.1021/acs.joc.2c00677>
- Dietl, M. C., Vethacke, V., Keshavarzi, A., Mulks, F. F., Rominger, F., Rudolph, M., Mkhaldid, I., & Hashmi, A. S. K. (2022). Synthesis of Heterobimetallic Gold(I) Palladium(II) Bis(acyclic diaminocarbene) Complexes via the Isonitrile Route. *Organometallics*, 41(6), 802–810. <https://doi.org/10.1021/acs.organomet.2c00021>
- Fiorito, D., Keskin, S., Bateman, J. R., George, M., Noble, A. J., & Aggarwal, V. K. (2022). Stereocontrolled Total Synthesis of Bastimolide B Using Iterative Homologation of Boronic Esters. *Journal of the American Chemical Society*, 144(18), 7995–8001. <https://doi.org/10.1021/jacs.2c03192>
- Green, M. T. (2022). Acyl Phosphates from Low Oxidation State Phosphorus for the Synthesis of Amides, Ketones and Heterocycles - Nottingham ePrints. <https://eprints.nottingham.ac.uk/69193/>
- Ischay, M. A., Hoang, B., Steinhuebel, D., Chin, M. G., Dixon, D. D., Elfgren, D., Heumann, L. V., Lew, W., Mundal, D. A., Neville, S., Shah, N. K., Shi, B., Clive, T. J., & Wang, Q. (2022). Process Development and Scale-Up of a Protease Inhibitor for the Treatment of HIV Featuring the Preparation of a Neopentyl Grignard Reagent and Development of a One-Pot Curt. <https://doi.org/10.1021/acs.oprd.2c00153>
- Kerkovius, J., Stegner, A., Turlik, A., Lam, P. H., Houk, K. N., & Yue, Y. (2022). A Pyridine Dearomatization Approach to the Matrine-Type Lupin Alkaloids. *Journal of the American Chemical Society*, 144(35), 15938–15943. <https://doi.org/10.1021/jacs.2c06584>
- Lasányi, D., Máth, D., & Tolnai, G. L. (2022). Synthesis and Use of Bicyclo[1.1.1]pentylaldehyde Building Blocks. *Journal of Organic Chemistry*, 87(5), 2393–2401. <https://doi.org/10.1021/acs.joc.1c02267>
- Oda, S., Fukui, Y., Hozumi, Y., Takeuchi, Y., & Hosoya, M. (2022). Development of an Optimized Synthetic Process for an Antiobesity Drug Candidate (S-234462) Featuring Mild Chlorination of Benzoxazolone and In Situ IR Monitoring of a Mitsunobu Reaction. *Organic Process Research & Development*, 26(8), 2483–2491. <https://doi.org/10.1021/acs.oprd.2c00150>

Synthesis

- Pinaud, M., Gall, E. L., & Presset, M. (2022). Mixed Aliphatic Organozinc Reagents as Nonstabilized C_{sp}³-Nucleophiles in the Multicomponent Mannich Reaction. *Journal of Organic Chemistry*, *87*(1), 1–10. <https://doi.org/10.1021/acs.joc.1c02996>
- Quiroz, M., Lockart, M. M., Saber, M. R., Vali, S. W., Elrod, L. C., Pierce, B. S., Hall, M. B., & Daresbourg, M. Y. (2022). Cooperative redox and spin activity from three redox congeners of sulfur-bridged iron nitrosyl and nickel dithiolene complexes. *Proceedings of the National Academy of Sciences of the United States of America*, *119*(25). <https://doi.org/10.1073/pnas.2201240119>
- Saunthwal, R. K., Mortimer, J. A., Orr-Ewing, A. J., & Clayden, J. (2022). Enantioselective one-carbon expansion of aromatic rings by simultaneous formation and chromoselective irradiation of a transient coloured enolate. *Chemical Science*, *13*(7), 2079–2085. <https://doi.org/10.1039/d1sc06684f>
- Scattolin, T., Gharbaoui, T., & Chen, C. (2022). A Nucleophilic Deprotection of Carbamate Mediated by 2-Mercaptoethanol. *Organic Letters*, *24*(20), 3736–3740. <https://doi.org/10.1021/acs.orglett.2c01410>
- Stephan, M., Dammannn, W., & Burger, P. C. (2022). Synthesis and reactivity of dinuclear copper(i) pyridine diimine complexes. *Dalton Transactions*, *51*(35), 13396–13404. <https://doi.org/10.1039/d2dt02307e>
- Tyler, J., Noble, A., & Aggarwal, V. K. (2022). Four-Component Strain-Release-Driven Synthesis of Functionalized Azetidines. *Angewandte Chemie*, *134*(52). <https://doi.org/10.1002/ange.202214049>
- Wang, K. L., Li, S., & Wang, J. (2022). Cu(I)/Chiral Bisoxazoline-Catalyzed Enantioselective Doyle-Kirmse Reaction of Allenyl Sulfides with α-Diazoesters. *Chemistry: A European Journal*, *28*(21). <https://doi.org/10.1002/chem.202200170>
- Wilhelmsen, C. O., Kristensen, S. B., Nolte, O., Volodin, I. A., Christiansen, J., Isbrandt, T., Sørensen, T., Petersen, C., Sondergaard, T. E., Nielsen, K. L., Larsen, T. O., Frisvad, J. C., Hager, M. D., Schubert, U. S., Muff, J., & Sørensen, J. L. (2022). Demonstrating the Use of a Fungal Synthesized Quinone in a Redox Flow Battery. *Batteries & Supercaps*, *6*(1). <https://doi.org/10.1002/batt.202200365>

Synthesis

- Burns, M., Perkins, D., Chan, L. W., Pilling, M. J., Jawor-Baczynska, A., Mullen, A. B., Steven, A., Wimsey, C., ElMekawy, A., Lamacraft, A. L., Dobson, B. J., McMillan, A., Hose, D. R., Inglesby, P. A., Raw, S. A., & Jones, M. (2021). Route Design to Manufacture: Synthesis of the Heterocyclic Fragment of AZD5718 Using a Non-cryogenic Lithiation-Alkoxycarbonylation Reaction. *Organic Process Research & Development*, 25(4), 858–870. <https://doi.org/10.1021/acs.oprd.0c00533>
- Dzhemilev, U. M., Khusainova, L. I., Ryazanov, K. S., & Khafizova, L. O. (2021). Boron-containing small rings: synthesis, properties, and application prospects. *Russian Chemical Bulletin*, 70(10), 1851–1892. <https://doi.org/10.1007/s11172-021-3292-2>
- Gartman, J. A., & Tambar, U. K. (2021). Synthetic Studies of the Rubellin Natural Products: Development of a Stereoselective Strategy and Total Synthesis of (+)-Rubellin C. *Journal of Organic Chemistry*, 86(16), 11237–11262. <https://doi.org/10.1021/acs.joc.1c00920>
- Li, D., Zhang, H., Lyons, T. S., Lu, M. M., Achab, A., Pu, Q., Childers, M. C., Mitcheltree, M. J., Wang, J., Martinot, T. A., McMinn, S., Sloman, D. L., Palani, A., Beard, A., Nogle, L., Gathiaka, S., Saurí, J., Kim, H., Adpressa, D. A., . . . Fischer, C. S. (2021). Comprehensive Strategies to Bicyclic Prolines: Applications in the Synthesis of Potent Arginase Inhibitors. *ACS Medicinal Chemistry Letters*, 12(11), 1678–1688. <https://doi.org/10.1021/acsmmedchemlett.1c00258>
- Lugosan, A., Todtz, S. R., Alcázar, A., Zeller, M., Devery, J. J., & Lee, W. (2021). Synthesis and characterization of trigonal bipyramidal FeIII complexes and their solution behavior. *Polyhedron*, 208, 115384. <https://doi.org/10.1016/j.poly.2021.115384>
- Millward, M., Ellis, E., Ward, J. M., & Clayden, J. (2021). Hydantoin-bridged medium ring scaffolds by migratory insertion of urea-tethered nitrile anions into aromatic C–N bonds. *Chemical Science*, 12(6), 2091–2096. <https://doi.org/10.1039/d0sc06188c>
- Sato, Y., Liu, J., Kukor, A. J., Culhane, J. C., Tucker, J. V., Kucera, D. J., Cochran, B. M., & Hein, J. E. (2021). Real-Time Monitoring of Solid–Liquid Slurries: Optimized Synthesis of Tetraabenazine. *Journal of Organic Chemistry*, 86(20), 14069–14078. <https://doi.org/10.1021/acs.joc.1c01098>

Synthesis

- Schnell, S. D., González, J. I., Sklyaruk, J., Linden, A., & Gademann, K. (2021). Boron Trifluoride-Mediated Cycloaddition of 3-Bromotetrazine and Silyl Enol Ethers: Synthesis of 3-Bromo-pyridazines. *Journal of Organic Chemistry*, 86(17), 12008–12023. <https://doi.org/10.1021/acs.joc.1c01384>
- Zhao, F., Singh, T., Xiao, Y., Su, W., Yang, D., Jia, C., Li, J., & Qin, Z. (2021). Divergent Synthesis of Substituted Amino-1,2,4-triazole Derivatives. *Synthesis*, 53(11), 1901–1910. <https://doi.org/10.1055/a-1477-4630>
- Andrea, K. A., Beckett, A. R., Briand, G. G., Martell, S. L., Masuda, J. D., Morrison, K. M., & Yammine, E. M. (2020). Synthesis and structural characterization of methylindium imino/aminophenolates: Comparison to aluminum analogues and reactivity toward the coupling reactions of carbon dioxide with epoxides. *Journal of Organometallic Chemistry*, 919, 121307. <https://doi.org/10.1016/j.jorganchem.2020.121307>
- Elipe, M. V. S., Cherney, A. H., Krull, R., Donovan, N., Tedrow, J. S., Pooke, D., & Colson, K. L. (2020). Application of the New 400 MHz High-Temperature Superconducting (HTS) Power-Driven Magnet NMR Technology for Online Reaction Monitoring: Proof of Concept with a Ring-Closing Metathesis (RCM) Reaction. *Organic Process Research & Development*, 24(8), 1428–1434. <https://doi.org/10.1021/acs.oprd.0c00125>
- Hao, X., Pan, X., Gao, Y., Wang, Y., Guo, J., & Teng, Y. (2020). Facile Synthesis of Nitrogen-Doped Green-Emission Carbon Dots as Fluorescent Off-On Probes for the Highly Selective Sensing Mercury and Iodine Ions. *Journal of Nanoscience and Nanotechnology*, 20(4), 2045–2054. <https://doi.org/10.1166/jnn.2020.17374>
- Homberg, A., & Lacour, J. (2020). From reactive carbenes to chiral polyether macrocycles in two steps – synthesis and applications made easy? *Chemical Science*, 11(25), 6362–6369. <https://doi.org/10.1039/d0sc01011a>
- Lyons, T. S., Martinot, T. A., He, C. Q., Qi, J., & Shao, G. (2020). Development of a Zinc-Mediated Approach to a 2,3-cis-Pyrrolidine Arginase Inhibitor. *Organic Process Research & Development*, 24(8), 1457–1466. <https://doi.org/10.1021/acs.oprd.0c00171>
- Maier, T., Gawron, M., Coburger, P., Bodensteiner, M., Wolf, R., Van Leest, N. P., De Bruin, B., Demeshko, S., & Meyer, F. (2020). Low-Valence Anionic α -Diimine Iron Complexes: Synthesis, Characterization, and Catalytic Hydroboration Studies. *Inorganic Chemistry*, 59(21), 16035–16052. <https://doi.org/10.1021/acs.inorgchem.0c02606>

Synthesis

- Malig, T. C., Tan, Y., Wisniewski, S. R., Higman, C. S., Carrasquillo-Flores, R., Ortiz, A., Purdum, G. E., Sergei, K., & Hein, J. E. (2020). Development of a telescoped synthesis of 4-(1H)-cyanoimidazole core accelerated by orthogonal reaction monitoring. *Reaction Chemistry and Engineering*. <https://doi.org/10.1039/d0re00234h>
- Malig, T. C., Yunker, L. P. E., Steiner, S., & Hein, J. E. (2020). Online HPLC Analysis of Buchwald-Hartwig Aminations from Within an Inert Environment. *ChemRxiv*. <https://doi.org/10.26434/chemrxiv.12798083.v1>
- Mao, H., Yuan, J., Zhang, P., Jin, M., Liu, J., & Zhao, Y. (2020). On-line attenuated total reflection infrared spectroscopy (ATR-IR): a powerful tool for investigating the methyl cyclopentenone synthesis process. *Analyst*, 145(21), 6987–6991. <https://doi.org/10.1039/d0an01327g>
- Mazzotta, F., Törnroos, K. W., & Kunz, D. (2020). Group 6 Carbonyl Complexes of C-Ylidic Cp Ligands. *Organometallics*, 39(19), 3590–3601. <https://doi.org/10.1021/acs.organomet.0c00556>
- Morgan, P. M., Hanson-Heine, M. W. D., Thomas, H. P., Saunders, G., Marr, A. C., & Licence, P. (2020). C–F Bond Activation of a Perfluorinated Ligand Leading to Nucleophilic Fluorination of an Organic Electrophile. *Organometallics*, 39(11), 2116–2124. <https://doi.org/10.1021/acs.organomet.0c00176>
- Murray, J. L., Sanders, J. N., Richardson, P. G., Houk, K. N., & Blackmond, D. G. (2020). Isotopically Directed Symmetry Breaking and Enantioenrichment in Attrition-Enhanced Deracemization. *Journal of the American Chemical Society*, 142(8), 3873–3879. <https://doi.org/10.1021/jacs.9b11422>
- Reddy, K. R., Siva, B., Reddy, S. M., Reddy, N. N., Pratap, T., Rao, B. D., Hong, Y., Kumar, B. V. K. V., Raju, A. K., Reddy, P. H., & Reddy, P. M. (2020). In Situ FTIR Spectroscopic Monitoring of the Formation of the Arene Diazonium Salts and Its Applications to the Heck–Matsuda Reaction. *Molecules*, 25(9), 2199. <https://doi.org/10.3390/molecules25092199>
- Staniuk, M., Rechberger, F., Tervoort, E., & Niederberger, M. (2020). Adapting the concepts of nonaqueous sol–gel chemistry to metals: synthesis and formation mechanism of palladium and palladium–copper nanoparticles in benzyl alcohol. *Journal of Sol-Gel Science and Technology*, 95(3), 573–586. <https://doi.org/10.1007/s10971-020-05278-z>

Synthesis

- Turksoy, A., Scattolin, T., Bouayad-Gervais, S., & Schoenebeck, F. (2020). Facile Access to AgOCF₃and Its New Applications as a Reservoir for OCF₂for the Direct Synthesis of N-CF₃, Aryl or Alkyl Carbamoyl Fluorides. *Chemistry: A European Journal*, 26(10), 2183–2186.
<https://doi.org/10.1002/chem.202000116>
- Xie, D., Zhu, S., & Lu, Y. (2020). Tailoring the AlCl₃/iPr₂O/Et₂O initiation system for highly reactive polyisobutylene synthesis in pure n-hexane. *RSC Advances*, 10(9), 5183–5190. <https://doi.org/10.1039/c9ra11003h>
- Zhao, W., Guizzetti, S., Schwindeman, J. A., Daniels, D. J., Douglas, J., Petit, S., Kelly, C., Kosanovich, A. J., & Knight, J. (2020). Some Items of Interest to Process R&D Chemists and Engineers. *Organic Process Research & Development*, 24(8), 1351–1363. <https://doi.org/10.1021/acs.oprd.0c00344>
- Zhou, Y., Wu, C., Ma, H., & Chen, J. (2020). Precise Preparation of a High-Purity Key Intermediate of Tazobactam. *Organic Process Research & Development*, 24(12), 2898–2905.
<https://doi.org/10.1021/acs.oprd.0c00407>



► <https://www.mt.com/ReactIR>

METTLER TOLEDO Group
Automated Reactors and
In-Situ Analysis

Subject to technical changes
© 09/2023 METTLER TOLEDO.
All rights reserved.