Special Issue

Engineering Advances in Asymmetric Catalysis: Scalable and Sustainable Synthesis

Message from the Guest Editors

Enantioselectivity is extremely important to pharmaceuticals, agrochemicals, and fine chemicals, directly impacting efficacy, safety, and performance in biological systems. Asymmetric synthesis remains the most promising method to achieve high enantioselectivity.

Advances in biochemical engineering, including enzyme immobilization, reactor design, and bioprocess optimization, have further enabled scalable asymmetric biocatalysis. The integration of these catalytic strategies into continuous-flow reactors, alongside innovations in process intensification and industrial-scale engineering, represents a critical frontier in modern chemical manufacturing. Additionally, the synergy of computational modeling, machine learning, and automated high-throughput screening accelerates catalyst discovery and reaction optimization, bridging the gap between lab-scale synthesis and industrial process engineering.

This Special Issue focuses on engineering-driven advances that enable the scalable and sustainable production of enantiopure compounds. We welcome studies on industrial process optimization, green catalytic technologies, and biochemical engineering approaches for asymmetric synthesis.

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