Special Issue

Metal–Organic Frameworks (MOFs): Challenges and Prospects in Energy Conversion

Message from the Guest Editor

Metal–Organic Frameworks (MOFs) have emerged as a transformative class of porous materials, offering unparalleled structural tunability, high surface areas, and modular functionality that position them as frontrunners in addressing global energy and environmental challenges. Their potential in energy conversion—including electrocatalysis, photocatalysis, and energy storage—has spurred exponential research growth, yet critical hurdles remain, such as limited chemical/thermal stability under operational conditions, poor electrical conductivity, scalability bottlenecks, and unclear structure–activity relationships. This Special Issue aims to consolidate cutting-edge advancements in MOF-based energy conversion systems, with a dual focus on challenges and prospects. We seek contributions that address (1) rational design strategies for stable, conductive MOFs and MOF-derived composites; (2) in situ characterization techniques to unravel catalytic mechanisms; (3) breakthroughs in performance metrics (e.g., efficiency, durability) for applications such as water splitting, NOx/CO_2 /SO2 reduction, and fuel cells; and (4) scalable synthesis routes for industrial translation.

Guest Editor

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Inorganic chemistry remains a lynchpin of modern chemistry, not only embracing the function and reactivity of combinations of most elements of the periodic table, but also providing a footing for studies of materials, catalysts, drugs, fuels and industrial chemicals. Arguably, the role and reach of inorganics in society have never been as great as today. Adventurous research at the heart and at the extremes of inorganic chemistry is vital to further advances and Inorganics offers authors the opportunity to publish exciting new research in an open access format.

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