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Covalent Organic Frameworks

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Message from the Guest Editors

Covalent organic frameworks (COFs) are a new class of crystalline porous organic material possessing two- or three-dimensional structures. COFs are constructed from pre-designed organic building units connecting by strong covalent bonds between light atoms (e.g., B, C, N, O, P, Si). COFs have emerged as a material with a wealth of applications, such as sorption, separation, optoelectronics, catalysis, sensors, drug delivery, energy storage, etc.

As a crystalline material, progress in developing their chemistry often dominates the ability to crystallize them. In most cases, reversible reactions have been used to build COF materials so that self-correction can be realized in the crystal growth of COFs by chemical equilibrium. However, the strength of covalent bonding between the building units often yields polycrystalline products. Hence, structural analysis of COFs usually combines multiple characterization methods, for example, powder X-ray diffraction (PXRD) modeling and TEM techniques.

In this Special Issue, we will focus on the design, synthesis, crystal growth, properties, and emerging applications of COFs.

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Message from the Editor-in-Chief

Welcome to *Crystals*, the journal dedicated to the fascinating world of crystallographic research! Crystals are more than mere decorative elements; they hold the key to understanding the fundamental structure of matter. Our mission is to explore the crucial significance of this research across various fields. From medicine to technology, chemistry to geology, crystals play a vital role. Their structure provides insights into new advanced materials, innovative drugs, and groundbreaking technologies. Through *Crystals*, we delve into the microscopic world to discover solutions that will shape the future. Join us on a journey through the *Crystals*, where science merges with beauty and innovation.

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