



## Microporous and Mesoporous Materials and Their Derived Hybrids as Systems for Controlled Release

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### Message from the Guest Editors

In recent decades, a diversity of materials such as polymers, ceramics, and semiconductors have been used as controlled release systems. Among the most versatile materials, microporous and mesoporous materials stand out due to their high surface areas and tailorable surface chemistry. Depending on the size and surface functionalization of the pores, increased or sustained controlled release of a loaded molecule can be obtained. Moreover, if these micro- and mesoporous materials are inorganic, hybrids can be synthesized through a combination with organic compounds such as biopolymers. Engineered hybrid materials exhibit new advantageous chemical and physical characteristics, which are not exhibited by the individual constituents. Particularly, improved control over drug release kinetics, enhanced stability in different media, and selective release can be achieved by gating the pores with responsive molecules.

Microporous- and mesoporous-based materials and their derived hybrids work for several molecules such as drugs, proteins, genes, fertilizers, nutrients, salts, and other biologically active agents.





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