Methods	Examples of mesoporous materials	Advantages	Disadvantages
Soft-templating method	• Silica • Aluminosilicates • Organosilica • Carbon • Metal oxides • Metals • Polymers • Phosphates	• Controllable mesostructures and pore sizes • Tunable morphologies and easily processable • High quality product • large scale production	• Uses surfactants • Mesostructure formation is highly sensitive to the reaction conditions • Relatively low crystallinity
Hard-templating method	• Carbon • Metal oxides • Metals • Metal sulfides • Metal nitrides • Metal carbides • Zeolites • Non-oxide ceramics	• Low sensitivity to the reaction conditions • High quality product • Highly crystalline product • Ordered nanoarrays structure	• Uses preformed hard templates • High cost • Time consuming
Multiple-templating method	• Silica • Carbon • Metal oxides • Zeolites	• Hierarchically porous structure	• Requires multiple templates • High cost • Time consuming
In-situ templating pathway	• Silica • Carbon • Metal oxides • Metals • Polymers	• Simple method • No preformed templates or surfactants required • Low cost	• Low quality • Hard to obtain ordered structures
Template-free packing method	• Carbon • Metal oxides • Metal sulfides	• Simple method • Easily processable • No templates required • Highly crystalline product	• Hard to obtain ordered structures
Reticular chemistry guiding approach	• Metal–organic frameworks • Covalent organic frameworks • Zeolitic imidazolate frameworks	• Controllable mesostructures and pore sizes • No templates • Highly crystalline product	• Low stability • Mesostructure formation is highly sensitive to the reaction conditions • Not easily processable