

Reticular Chemistry and Machines for Clean Air and Water

Abstract: Reticular chemistry, linking of molecular building blocks by strong bonds to make crystalline extended structures, has led to ultra-porous metal-organic frameworks (MOFs) and covalent organic frameworks (COFs). Here, organic and inorganic (for MOFs), as well as just organic molecules are stitched together with covalent bonds (for COFs) to make crystalline, porous frameworks of high architectural and chemical robustness. This opened the way to carrying out chemistry on frameworks and chemically functionalizing the pores for water harvesting from air and carbon capture from air and flue gas. The chemistry to make these frameworks and their integration into machines capable of producing clean water and clean air will be presented.