

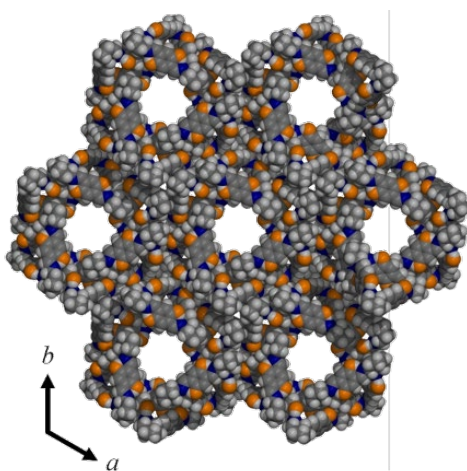
# Complementary tools for in situ analysis of porous materials – some perspectives

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The inclusion of small guest molecules into porous crystalline materials promises several exciting innovations in a wide range of areas, including separation and storage of gases or vapours, chemical sensing, and catalysis. Using now well-established principles of crystal engineering we can aspire to design porous materials with tailored structural and physical properties. However, there is still a need to develop new approaches to understanding the sometimes-complicated relationships between molecular-level structure and physico-chemical properties. In this regard, devising a range of complementary experiments to characterize materials under controlled environments such as gas pressure can be particularly challenging. This presentation will describe the development and application of a suite of approaches to structural analysis by means of in situ X-ray diffraction, complemented by physicochemical characterization using a combination of sorption analysis and thermoanalytical techniques.<sup>1-4</sup>



**Figure 1.** A molecular crystal forms 1 nm wide channels that readily and reversibly absorb water.<sup>3</sup>

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