

## Physical Properties of Metal-Organic Frameworks: an Overview

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The interesting physical properties of metal-organic frameworks (MOFs), beyond their widely-studied adsorption phenomena, have been appreciated for more than a decade [1]. In particular, there has been increasing excitement concerning the remarkable mechanical, optical, magnetic, ferroelectric and electronic behaviour of MOFs, both porous and dense. The presentation will review some of the work that we have carried out in these areas, including fundamental studies of mechanical properties [2-4], high pressure synchrotron X-ray work [5-7], multiferroic behaviour [8,9], and amorphisation/glassy behaviour [10,11]. The physical properties of MOFs are often intimately linked to their flexibility and phase transitions [12], and we shall discuss the important role that vibrational entropy can often play in such behaviour [13-16].

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