

## **Materials chemistry: Design, Synthesis and Functionality**

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The need to synthesise new materials is driven by the need for materials with specific functionality, which is in turn driven by the intended final application. In this talk we will explore the design of materials based on the application for which they are intended and the ways in which they can be synthesised and characterised. From the materials perspective we will focus on inorganic–organic hybrid materials, metal phosphonates and metal oxides, and discuss how we can make such materials which exhibit properties of luminescence and antimicrobial activity. Characterisation of materials using crystallography, photoluminescence and adsorption spectroscopies, and how the biological activity of materials is determined will be discussed.