



Richard Catlow is developing and applying computer models to solid state and materials chemistry — areas of chemistry that investigate the synthesis, structure and properties of materials in the solid phase. By combining his powerful computational methods with experiments, Richard has made considerable contributions to areas as diverse as catalysis and mineralogy.

His approach has also advanced our understanding of how defects — missing or extra atoms — in the structure of solids can result in non-stoichiometric compounds. Such compounds have special electrical or chemical properties since their contributing elements are present in slightly different proportions to those predicted by chemical formula.

Richard's work has offered insight into mechanisms of industrial catalysts, especially involving microporous materials and metal oxides in structural chemistry and mineralogy. Simulation methods are now routinely used to predict the structures of complex solids and silicates, respectively, thanks to Richard's demonstrations of their power. Richard was elected Foreign Secretary and Vice-President of the Royal Society in 2016