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Dr. P. Bowen after gaining his BSc in Physics at Imperial College (UK). obtained his Ph.D. in Physical Chemistry in the field of catalysis from the University of Cambridge, UK, in 1982, He then worked at the BP Research Centre, Sunbury, UK, for 4 years in applied surface sciences before moving to Switzerland and EPFL (école Polytechnique Fédérale de Lausanne) in1987. He has been at the Powder Technology Laboratory, in the Materials Institute since its conception in 1988. He has over 150 publications and has written an undergraduate book on ceramics- from synthesis to processing. His main research interests are powder synthesis, powder characterisation, colloidal processing, sintering of ceramics and atomistic modelling of surfaces and interfaces.

The underlying theme is the control of the interaction of surfaces and interfaces. From solid-liquid interfaces in precipitation or powder suspensions to grain boundaries in sintered ceramics. The interfacial interactions are investigated at an atomistic level using classical energy minimisation and molecular dynamic simulations as well as thermodynamic speciation in solution. The interactions between particles in suspension is a strong theme – be it in de-agglomeration of nanosized powders, the dispersion of cementitious materials to improve rheological behaviour or self-assembly during precipitation. Using additives, the interfacial properties and interactions between particles and development of microstructures can be modified and controlled: This knowledge and control of interfacial interactions has lead to controlled morphology and self-assembly of nanostructured calcite and oxalates; more efficient dispersion of cement; the production of transparent polycrystalline alumina; and novel nanoparticles and porous nanostructured particles for photocatalytic antibacterial applications.