# Fire Retardant Behaviour of Composites

*Baljinder K Kandola*

*Institute for Materials Research and Innovation, University of Bolton, Deane Road, Bolton BL3 5AB, UK*

‘Composite’ is a general term used for a combination of two dissimilar materials. For structural/semi-structural applications fibre-reinforced polymeric composites are used, where both fibre and polymeric matrix may vary chemically depending upon the end use application. The chemical nature of each phase determines the flammability properties of the resulting composite. While mechanical properties of different composites are determined by physical and structural properties the reinforcing fibrous phase, post-heat/fire residual properties depend upon chemical properties of the matrix. This lecture will discuss flammability issues associated with different types of composites and strategies employed to render them flame retardant. These methods include; (1) chemical modification of the resin matrix (2) addition of conventional flame retardants, nanoparticles such as nanoclays, nanotubes, polyhedral oligomeric silsesquioxane and graphene, (3) resin / polymer blending and (4) the insulation of the exposed laminate surface using heat resistant surface coatings.