

Henshall, John Leslie



- B.A.(Cantab) 1st Class Hons., Natural Sciences (Materials Science),
- 1976 M.A.(Cantab),
- 1976 Ph.D.(Cantab)
- 1979 Member Institution of Metallurgists (now Institute of Materials)
- 1979 Chartered Engineer
- 1985 Member Institute of Road Transport Engineers (now Society of Operations Engineers)
- 1998 Honorary Professor, Yanshan University, Qinhuangdao, China

The aim of the major part of his research activities is to study the relationship between the processing, microstructure and mechanical behaviour of materials, particularly advanced ceramics, composites and metals. The modelling of the mechanical properties of materials and components is also being pursued actively at the present time using both finite element and analytical approaches as appropriate. The main other research areas have been concerned with the synthesis of new materials, including nanomaterials, ceramic coatings and high purity end-substituted alkanes and the investigation of their structures and properties. Brief outlines of some of the research activities are described below.

Structural ceramics and ultra hard materials have received a strong impetus over approximately the last 15 years. Since these materials are right at the forefront of high technology, the development of experimental apparatus to be able to measure their properties is exceedingly difficult. Recently, the development of a new contact fatigue test method has allowed the build up of deformation and fracture in ceramics subjected to repeated loading to be measured. The finite element analysis of rigid indentation and soft impresser testing, including time dependent, repeated loading and sliding has been used as a method to be able to determine the behaviour of these materials under point contact loading conditions, which are relevant to many current and potential applications of these materials.

The synthesis of advanced ceramic materials has concentrated on developing a novel ceramic coating method, manufacture of silicon nitride based ceramic nano/micro-filters and tough ceria stabilised tetragonal zirconias.

The machining of materials has been studied with respect to the use of ultrahard material tools, green compact machining of ceramics, and the role of lubricants in conventional metal cutting.

A completely different area of research has been concerned with investigating the causes of failure in commercial vehicle wheel fixing systems. This work has received national recognition through publication by the Institute of Road Transport Engineers and articles in the press, on radio and television.

In addition to these main research areas, technical consultancy, including expert witness appearances, has been undertaken in failure analysis in mechanical, electrical, medical and marine components, mechanical engineering design, and property testing and microstructural evaluation.