

# Stokes polarimetry and magneto optical properties of nanostructured materials

**Abstract** Stokes parameters fully characterise the polarisation state of light in an experimentally accessible manner. Photoelastic modulator (PEM) based Stokes polarimetry offers a very high sensitivity which is particularly suitable for the investigation of the magneto-optical properties of nanostructured magnetic materials. In this talk, a robust methodology recently developed, which utilizes a dual PEM setup, is described. As an example of its application, the magneto-optical characteristics of focused Ga ion beam patterned Fe films is presented. A comparison is also made between the magneto-optical behaviour of patterned thin films and that of anodic aluminium oxide embedded magnetic nanowire arrays.

**Tiehan Shen** Dr. Tiehan Shen's research career has taken him from Peking University (BSc 1982), to Cambridge (PhD 1988), then to Cardiff (PDRA), Leeds (Lectureship in Physics, 1992) and Salford (Readership in Magnetism, 2000). In recent years he has been interested in the fabrication and characterisation of nanostructured materials, in particular magnetic nanostructures and their magneto-optical characteristics. A 'spin off' from the research activities is the development of a novel polarisation microscope for application in life science research, which is being actively pursued in collaboration with biologists at Salford and Manchester. He has co-authored over seventy publications in peer-reviewed journals. The field of research covered by these works falls broadly within Condensed Matter Physics and Functional Materials. Shen is married to Dr. Ronghui Liu, a Beida alumna. They have two sons, aged 17 and 14, who are both King's Scholars at Eton.