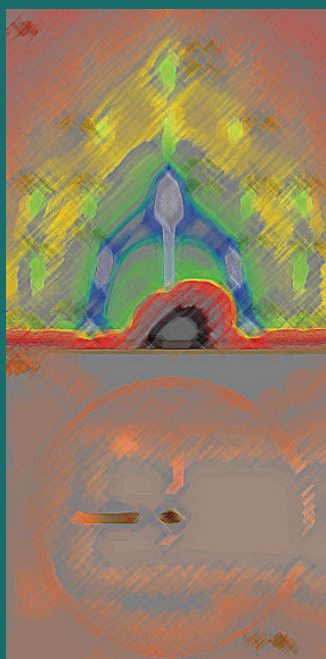
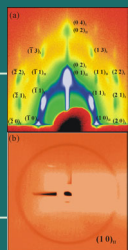


Materials Chemistry



Introduction

Mechanical strength and stability of mesoporous films are important prerequisites for their optical and electronic applications, and good mechanical properties can be achieved through well-organized film texture. Determination of the structures of the well aligned mesoporous silica film is carried out by K.-J. Chao *et al.* Professor Chao demonstrated that synchrotron thin film X-ray methods, including reflectivity and diffraction (GIXD and XRR), are powerful tools in analyzing structure and pore properties of mesoporous thin films and in monitoring the formation of mesoporous thin films. J.-R. Chang *et al.* studied the catalysis properties of the highly dispersed Pd clusters on TiO₂ grafted SiO₂. The interactions between noble-metal clusters and non-reducible-metal-oxide carriers are critically important in determining the properties of materials used in catalysts and sensors. The second metal oxide in changing the catalytic performance is fully characterized by XANES and EXAFS methods. Inferred from the EXAFS results, Chang concluded that the grafted TiO₂ help anchor Pd(Ac)₂ and prevent the agglomeration of PdO_x during calcinations thereby enhancing the Pd dispersion on the TiO₂-SiO₂ support. Implementing EXAFS on soil science research has brought M.-K. Wang *et al.* to a territory of atomic-level while many others are still working on macroscopic information. The equilibrated pH of suspension affects significantly the species of Cu sorbed on the surface of soil sorbents. Sorbed species (Cu²⁺) and precipitated (Cu(OH)₂) phases were formed at the equilibrated pH of suspensions below and above 5.63, respectively.