

# INDUSTRIAL APPLICATIONS

Seven carefully selected experiments that were successfully accomplished in the Industrial Applications field in 2003B and 2004A are presented.

The very interesting and useful experiments described in this section were performed using the following five different beamlines: one experiment was accomplished using the XAFS beamline BL01B1, three experiments were carried out using the Engineering Science Research beamline, BL19B2, and three experiments were performed using the Medical and Imaging I beamline BL20B2, the White Beam X-ray Diffraction beamline BL28B2, and the R&D(1) beamline BL47XU. respectively.

The result of the first experiment clearly showed that the Ge atom in the crystal and amorphous phases of  $\text{Ge}_2\text{Sb}_2\text{Te}_5$  alloy for the rewritable digital versatile disc is located at an octahedral (crystal) or a tetrahedral (amorphous) symmetry position (BL01B1).

In the second experiment, the electronic properties of the Pt nanoparticle surface was analyzed using the structural model obtained by *in situ* XAFS and *in situ* X-ray diffraction techniques (BL19B2). The third experiment concerned the study of the stress depth profile of ceramic layers of a cutting tool (BL19B2).

The fourth experiment was on white X-ray topography used to determine 3D dislocation structures in silicon (BL28B2), and in the fifth experiment, X-ray topography of a SiC single crystal produced by "Repeated A-Face" growth process was carried out (BL20B2).

The sixth experiment was a mechanism analysis of the curing reaction for polymer-modified cement (BL19B2), and the last experiment was on *in situ* high-resolution X-ray tomography of fracture in aluminum foam (BL47XU).

It can be declared with confidence that the outstanding articles presented in this section provide good models for material researchers and analytical scientists.

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