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Quantitative analysis of buried structures in polymer, nanoparticles and their nanocomposites by GISAXS¹ ZHANG JIANG, XUEFA LI, DONG RYEOL LEE, MICHAEL SPRUNG, JIN WANG, X-ray Science Division, Argonne National Laboratory — Grazing incident small angle x-ray scattering (GISAXS) is a powerful and rapidly developing technique for the characterization of nanoscopic morphology and structures at surfaces. However, due to complicated data analysis involving distorted wave Born approximation (DWBA), most of the quantitative analysis nowadays is carried out only on surface structures. When combined with x-ray resonant-enhanced geometry, GISAXS can be extended to measure the buried structures in 3D polymer, nanoparticles and their nanocomposite thin films. In the current work, a more comprehensive approach is developed in order to extract in-plane structures as well as their depth-dependence within thin films, which cannot be readily accessible using conventional techniques, such as scanned probe microscopy.

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