

X-RAY DIFFRACTION CHARACTERIZATION OF NANOMATERIALS USED IN IMAGING APPLICATIONS

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Digital imaging is composed of capture, storage, and display of an image. Whether it is a digital camera, SD card, ink jet printer, or liquid crystal display, the growth of nanotechnology is having an impact on advances in imaging technology.

Nanoparticulate materials are generically defined as being smaller than 100 nm. These nano materials can demonstrate unique properties that differ significantly from the bulk state. Analytical techniques capable of characterizing the composition and micro (nano) structure of materials are critical for continued growth in the imaging industry. X-ray diffraction is one of the tools available for analyzing solids and has become an important method for evaluating nanomaterials. Examples will be presented describing an assortment of nanomaterial analyses, including phase identification, crystallite size determination, superlattice generation, and new materials development.