

Advances in Nondestructive Elemental Assaying Technologies

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There is a great need for new nondestructive detection technologies that provide substantially more information than conventional X-ray projective imaging technologies. A variety of techniques using high energy X-ray beams have been developed in recent years to provide non-destructive materials discrimination and identification. In many cases, a major step forward in the fields of application and performance of these new non-destructive assaying technologies would be provided by the availability of tunable, narrow energy band high energy X-ray sources. Examples of the present state-of-the-art nondestructive assaying technologies will be presented, such as Dual Energy Imaging, Nuclear Resonance Fluorescence, Prompt Neutrons from Photofission, etc. Requirements of the next generation electron and X-ray sources that enable new applications and significant performance increases will be discussed.