

X-ray tomography for characterization of advanced materials

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X-ray computed tomography (CT) is increasingly used for advanced materials characterization, for qualification efforts and for failure analysis. This keynote talk will discuss the growing use of CT for advanced engineering materials, including additive manufacturing. Examples will be presented of its use in evaluating and understanding the distributions of porosity, surface roughness and other defect types, as well as the influence of these on mechanical performance using nondestructive before-after tests of the same samples. In addition to examples presented relevant to additive manufacturing, its use in a broader context for industrial inspection for advanced materials will be discussed. Finally, the latest software capabilities will be presented including deep learning segmentation of CT images, allowing more data to be extracted from this powerful technology.