# A NOVEL DIGITAL X-RAY TOPOGRAPHY SYSTEM

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X-Ray topography is generally recognized as being a powerful tool for directly imaging defects in single crystals, semiconductor substrates and epitaxially grown layers. The timely identification of defects can lead to huge cost savings in wafer processing and increased yields. However, the primary limitation to its general usage within the semiconductor community has been the difficulty in system use and difficulty in integration into an in line analytical tool. To address the wider use of this powerful tool, Bede Scientific has developed a novel, high-speed digital x-ray topography concept (patent applied for) that can be implemented on an x-ray diffraction system equipped with a wafer stage and using the Microsource® x-ray tube. In this paper, we will present examples from work undertaken on a variety of materials, including: Si, SiC, $Li_3NbO_4$, InP and GaAs. Both reflection and transmission methods will be illustrated. All data was collected on a Bede D1 system using a Microsource®, a specially designed CCD detector, and an innovative software integration algorithm.