

Abstract Submitted  
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**Nanoscale defect architectures and their influence on material properties**<sup>1</sup> BRANTON CAMPBELL, Brigham Young University, Dept. of Physics & Astronomy — Diffraction studies of long-range order often permit one to unambiguously determine the atomic structure of a crystalline material. Many interesting material properties, however, are dominated by nanoscale crystal defects that can't be characterized in this way. Fortunately, advances in x-ray detector technology, synchrotron x-ray source brightness, and computational power make it possible to apply new methods to old problems. Our research group uses multi-megapixel x-ray cameras to map out large contiguous volumes of reciprocal space, which can then be visually explored using graphics engines originally developed by the video-game industry. Here, I will highlight a few recent examples that include high-temperature superconductors, colossal magnetoresistors and piezoelectric materials.

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