



Dr. Martin Holt
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Theme: X-Ray Microscopy
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Research Summary:

Current research activity is in the use of nanoscale diffraction microscopy as a probe of local structural physics in materials. This is broadly associated with two related areas: observation of novel nanoscale phase phenomena in active materials, and observation of unique material behavior of nanoscale objects. Also active in development and commissioning of novel hard x-ray focusing optics (Multilayer Laue Lens), and frontier imaging techniques (divergent beam coherent Bragg diffraction imaging of disorder in solids).

Selected Recent Publications:

M. Holt, M. Sutton, P. Zschack, H. Hong, and T.-C. Chiang “Dynamic fluctuations and static speckle from critical x-ray scattering in SrTiO₃” *Phys. Rev. Lett.* **98**, 065501 (2007)

M. Holt, Kh. Hassani, and M. Sutton, “Microstructure of ferroelectric domains in BaTiO₃ observed via X-ray microdiffraction”, *Phys. Rev. Lett.* **95**, 085504 (2005)

M. Sutton, M. Holt, Y. Zuo, and D. Plant “X-ray diffraction imaging of strain fields in a domain-inverted LiTaO₃ crystal” Kh. Hassani, – *Journ App Phys* **104** 043515 (2008)

H. Hong, R. Xu, A. Alatas, M. Holt, and T.-C. Chiang “Central peak and narrow component in x-ray scattering measurements near the displacive phase transition in SrTiO₃” – *Phys Rev B* **78** 104121 (2008)