Project Goals

Advance and integrate multi-dimensional scanning probe microscopy for atomicscale mapping of surface chemical interactions and for new materials development.

Resources Needed

Machine shop Electronics shop Software development Tools for integration with machine learning/big data analysis



PI/Group

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Link/Reference

https://pubs.acs.org/doi/abs/10.1021/acs.accounts.5b00166 E.I. Altman, M.Z. Baykara and U.D. Schwarz, Acc. Chem. Res. 2015, **48**, 2640.

Current Use of Cores

Gibbs machine shop – fabricated scanning tunneling microscopes, customized UHV parts

Complementary measurements – x-ray diffraction, XPS, etc. YINQE, CRISP, West Campus Materials Core How might a new instrumentation development center help?

Develop state-of-the art control electronics – higher speed, reliability and throughput.

Enable new imaging modes dependent on fast collection and storage of a large amount of data.

Integrate data collection and analysis – smart data collection and machine learning for chemical and property mapping of complex materials.

What difference can it make to your research and the training of personnel?

Research – create new opportunities to study complex materials and phenomena (e.g. quintenary alloys, 2D materials that couple magnetic, elastic and electrostatic responses.

Training – expand training opportunities to integrate the hot topics of big-data and machine learning.