

CORRELATED OXIDES AND OXIDE INTERFACES WORKSHOP SUMMARY

The workshop, "Correlated Oxides and Oxide Interfaces" took place May 1-4, 2014 in Mayo Auditorium and was jointly sponsored by FTPI and the Gordon and Betty Moore Foundation. It was organized by Martin Greven and Alex Kamenev (both U of M) with the help of Mohit Randeria from the Ohio State University. The workshop covered novel experimental and theoretical developments in the field of correlated oxides. It brought together more than a 100 participants, among them most of the leading experts in the study of correlated oxide interfaces, heterostructures and bulk heterogeneities. The 3.5 day event featured 37 plenary talks as well as the posters session with 26 posters.

Oxide interfaces and heterostructures is a new emerging area of studies, which attracts increasing attention of condensed matter physicists as well as material scientists and engineers. The very recent technological advances of molecular beam and vapor deposition epitaxy allowed for a controlled fabrication of complex oxide layers with the atomic precision. A variety of such structures were fabricated and investigated vis-à-vis their physical and electrical properties. They exhibit a surprisingly broad spectrum of phenomena including superconductivity, magnetism, metal-insulator transitions among others. At the moment there is no unifying theoretical framework, capable of explaining and predicting these phenomena, guiding and informing the fabrication process.

The current state of affairs is similar to that in the field of semiconductor interfaces in the sixties. The digital revolution became only possible due to the progress in their understanding and manufacturing, which followed since. It is highly possible that the oxide interfaces will bring comparable changes in the science and technology. The workshop gave an exciting snapshot of current early-days efforts in this direction. It is worth emphasizing that the University of Minnesota is one of the leaders in the field: both Physics and Material Science Departments have active and growing groups. One of the successes of the Workshop was reaching "across the street" and bringing together audiences from multiple departments. It was a poster child event for FTPI interdisciplinary outreach.

By all accounts the Workshop was undisputable success. It generated momentum for deepening cooperation between the Departments, which highlights the investments FTPI and the Physics Department recently made in the field of strongly correlated materials.

Summary by Alex Kamenev

<http://www.ftpi.umn.edu/workshops/2013-2014/correlatedoxides2014/index.html>