

## MM 43: Invited talk Kaplan

Time: Wednesday 18:30–19:00

Location: TC 006

**Invited Talk**

MM 43.1 Wed 18:30 TC 006

**Structural vs Chemical Adsorption Transitions at Surfaces & Interfaces** — •WAYNE KAPLAN — Department of Materials Science & Engineering, Technion - Israel Institute of Technology, Haifa, Israel

It is recognized that grain boundaries (GBs) can be described using diffuse interface theory, where the structure and chemistry of GBs, interfaces and surfaces can go through 2-D transitions between thermodynamic states (termed complexions) in order to minimize the interface energy. As such, complexions for surfaces and interfaces are analogous to phases in the bulk. To date, almost all studies have been conducted on GBs in single phase polycrystalline systems, which by definition are not at equilibrium. Similar questions have been raised

regarding interfaces in thin film studies, where the deposition process may be very far from equilibrium.

This presentation will focus on an experimental approach to address the structure, chemistry, and energy of complexions at interfaces which are fully equilibrated, from which it can be demonstrated that a change in complexion minimizes interface energy. This will be compared with solid-liquid interfaces, where a region of ordered liquid exists adjacent to the interface at equilibrium, and the details of a solid-solid interface where the reconstructed interface structure accommodates lattice mismatch for a nominally incoherent interface. These three systems will be compared to known reconstructed solid surfaces, which can also be described as complexions, within a more generalized Gibbs adsorption isotherm.