

Neutron Reflectometry and Electrochemistry: Excellent Complements

Abstract:

Neutron scattering techniques are quite adaptable to use with many sample environments. In this case the focus is on the combination of neutron reflectometry and electrochemistry, in situ. Using both types of measurement together can help distinguish between several possible conclusions or reveal aspects of the system that would not be determined with either method alone. This talk will illustrate the benefits of this complementary nature through specific instances in which the combination led to new results. In particular, it will discuss the first combination of electrochemical impedance spectroscopy in situ with neutron reflectometry to determine the structure, composition and certain electronic properties of an anodic oxide film on zirconium, and the observation of electrolytic hydrogen absorption through a titanium oxide film and into the underlying titanium metal.