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Invited talk

Neutron and AFM Studies for Understanding of Boundary Lubrication

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Boundary lubrication is one of the most interesting topics in the field of tribology, and a lot of studies have been conducted from the past for understanding the characteristics of boundary lubrication layers. General boundary lubrication layers are formed by the adsorption of additives mixed into lubricant, and then the tribological performances are drastically improved in many cases. However, there is still room for discussion on the 'actual' structure of adsorbed additive layer at the solid-liquid interface. This talk will introduce the recent approaches using neutron reflectometry (NR) and frequency-modulation AFM (FM-AFM) for in-situ and operando structural analysis of adsorbed additive layer, and the relationship between the structure and friction coefficient under boundary lubricated condition will be discussed, especially for advanced development of products for daily use.