

ESMC 2025 - Thin-Film Lubrication and Interfacial Rheology – Mini Symposium 8-2

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To decrease friction dissipation, thin low shear strength layers of fluid are interposed between two antagonistic surfaces in contact. With a general trend to lower viscosity, the film thicknesses are now ranging from few micrometers to few nanometers, depending on the contact kinematics, meaning that all the lubrication regimes are of interest, in terms of both film forming capability and friction. Shear response as well as velocity accommodation mechanisms through the film thickness in these conditions involving solid deformation, with possibly high pressure and temperature gradients and/or film thickness reaching the order of magnitude of the surface roughness, are on-topic.

This symposium addresses the physics and mechanics of lubrication and interfacial rheology in confined contacts. All the lubrication regimes will be discussed, as well as experimental and/or numerical simulations, for transient and steady-state conditions.

The particular topics to be covered in this mini-symposium, but not limited to, include: lubricant/surface interactions, rheology, EHL, boundary lubrication, hydrodynamic lubrication, numerical methods, molecular dynamics, ionic liquids, water-based fluids, greases, surface texturing, rough surfaces.