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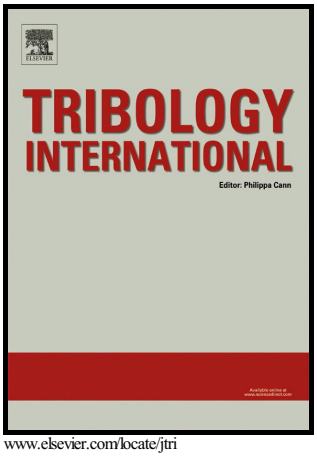

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Generation of Wear Particles and Running-In in Mixed Lubricated Sliding Contacts

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Abstract

A new model was developed for the simulation of wear particles formation in mixed lubricated sliding contacts. The simulations are based on a previously developed half-space algorithm coupled with a numerical elasto-hydrodynamic lubrication solver utilizing the load-sharing concept. A particle removal criterion based on a critical Von Mises stress and a geometrical boundary condition was successfully implemented. The resulting model allows for the determination of the size of the particles generated in different conditions. The model was applied to the simulation of running-in and validated using experimental measurements of the initial and run-in friction coefficient in a mixed lubricated contact. Additionally, dynamic light scattering (DLS) measurements of the wear particles size were performed and compared to the simulation data.

Keywords:

Wear Particles Size; Mixed Lubrication; Simulation; Running-in