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Fluorescent nanospheres as a probe for confined fluids rheology MOURAD CHENNAOUI, JANET S. WONG, Dept. of Mechanical engineering, Imperial College London, TRIBOLOGY GROUP TEAM¹ — Research in the understanding of the dynamics of confined thin films has proved to be challenging. While theoretical models and computer simulations have been developed, few experiments have been performed. One such attempt was the use of well defined geometries with surface forces apparatus (SFA) combined with fluorescence spectroscopies developed in the Granick group. We have extended this technique by incorporating fluorescence imaging and particle tracking within a tribological contact. Nanoparticles and quantum dots were used as our tracers. A sphere on flat geometry was employed and shear was applied. The dynamics of the particles was monitored as they progressed through the contact. The interrelationship between dynamics of confined fluids and their tribological properties was explored. Furthermore, tracers were also used to model how wear particles interact with the contacting surfaces at a tribological contact.

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