

Abstract Submitted
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Exploring field effects on ionic liquid boundary lubrication¹

ROSARIO CAPOZZA, International School for Advanced Studies (SISSA), Via Bonomea 265, 34136 Trieste, Italy, ANDREA BENASSI, Empa, Materials Science and Technology, Uberlandstrasse 129, 8600 Dubendorf, Switzerland, ANDREA VANOSSI, CNR-IOM Democritos National Simulation Center, Via Bonomea 265, 34136 Trieste, Italy, ERIO TOSATTI, International School for Advanced Studies (SISSA) & International Centre for Theoretical Physics (ICTP), Trieste, Italy — Ionic liquids, organic salts that are liquid at room temperature, are of great physical as well as of technological interest. Their adhesion properties to solid surfaces under pressure suggests their use as boundary lubricants. One potentially interesting feature would be the possibility that electrical charging of the solid plates or more generally an applied static or dynamic electric field could modify the nearby perpendicular and parallel ordering of ions, and in turn also modify the sliding friction. While these effects have just begun to be pursued by experimental groups, we have undertaken molecular dynamics simulations aimed at exploring some of these questions. Preliminary results obtained using very simple molten salt boundary lubrication models will be presented and discussed.

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