

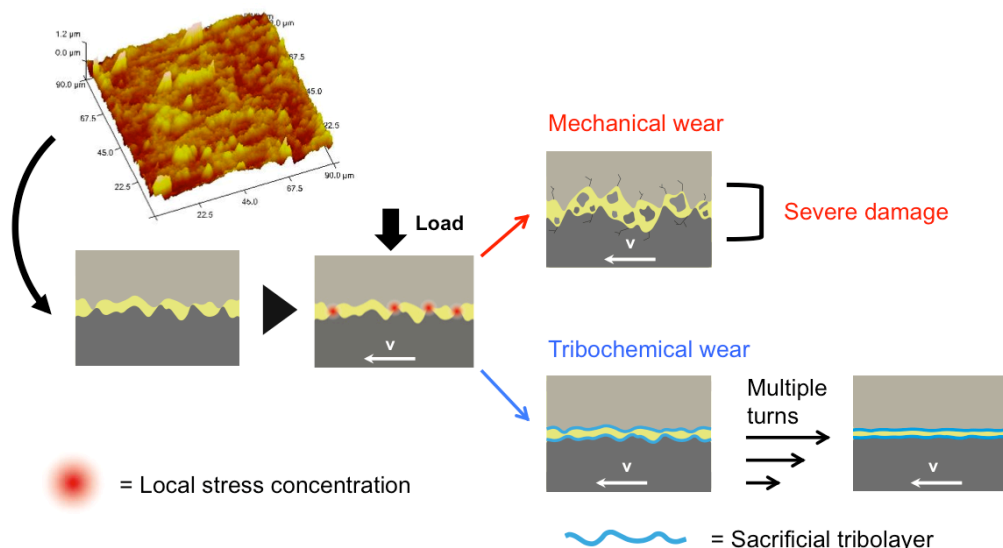
Development of ionic-liquid-based lubricants for high-performance ceramic contacts

Supervisor: Prof. N.D. Spencer, Prof. A. Rossi

Tutors: Dr. Andrea Arcifa, Prof. Dr. Antonella Rossi

A project (master's or bachelor's) is available in the Laboratory for Surface Science and Technology.

The experimental work is directed towards understanding the mechanisms of wear and lubrication observed when using ionic liquids as lubricants or lubricant additives for ceramic materials, with the aim of developing design principles for IL-mediated lubrication for real applications.



Description of the activity: Tribological tests will be carried out by means of pin-on-disk tribometry. The effect of experimental parameter, such as load and speed will be investigated in the presence of humid air and under a nitrogen atmosphere, i.e. a N_2 -filled glove box.

The student will learn how to design and interpret tribological experiments, being also involved in the characterization of the samples by optical microscopy, secondary electron microscopy and profilometry. Surface-chemical analysis techniques will be also exploited in this project.

The morphological, topographical and chemical changes induced by sliding in the presence of different lubricants will be investigated for interpreting the wear mechanisms and the related tribological performance of lubricated counterparts.

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