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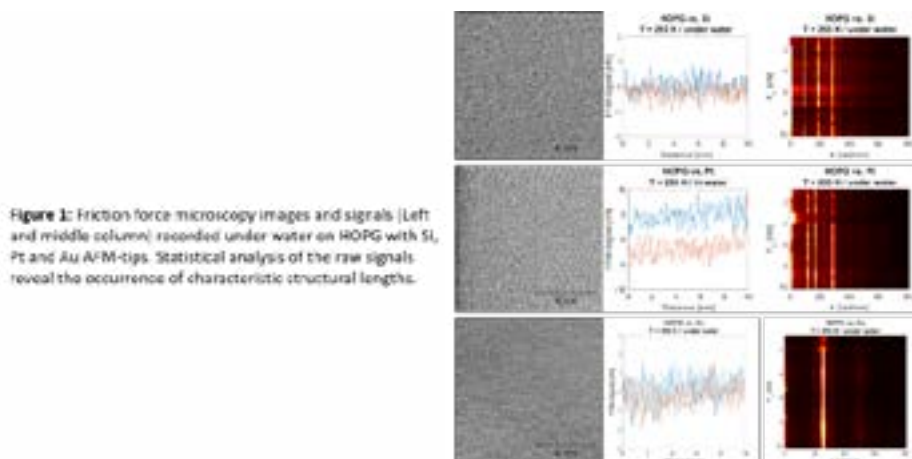
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## On the structure and tribological effect of interfacial water between a graphite surface and metallic or semiconducting counter bodies

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In this work, we apply atomic force microscopy/spectroscopy (AFM/S) and friction force microscopy (FFM) in immersed conditions to probe the structure of water at the interface of highly oriented pyrolytic graphite (HOPG) and AFM tips with different metallic coatings. While AFS measurements allow the observation of the layering of water molecules as a function of the distance from the HOPG surface, FFM measurements and the occurrence of molecular scale stick-slip provide new insights in the two-dimensional distribution of interfacial water molecules. The layering of water is found to be significantly affected by the chemistry of the AFM tip approaching the HOPG surface. Beside the periodicity of the graphitic honeycomb structure, statistical analysis of the stick slip friction behavior reveals characteristic structural lengths that also depend on the chemistry of the AFM-tip sliding on HOPG. We discuss these observations based on the conformation of different ice structures at the interfaces between an HOPG surface and different counter bodies.



### Biography

Arnaud Caron is a Materials Scientist with expertise in "The multi-scale mechanical behavior of materials, surfaces and micro-components". Since 2015, he is an Assistant Professor at Korea University of Technology and Education, Republic of Korea. He obtained his engineering degree in Materials Science in 2004 at University of Saarland, Germany and was awarded with the Schiebold Medal. In 2009, he completed his Doctoral degree in Materials Science at University of Saarland, Germany. From 2007 to 2015, he worked as a Research Associate at Institute of Micro- and Nanomaterials of the University of Ulm, Germany.

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