Special Issue

Design, Preparation, and Thermocapillary Migration Behavior of Lubricating Materials

Message from the Guest Editors

Thermocapillary migration is a very intriguing phenomenon, in which the variation in the surface tension of a liquid is affected such that the liquid is driven from low-tension regions to high-tension regions. This implies that a thermal gradient, which might occur on rubbing surfaces due to frictional heating, can induce a movement of liquid lubricants from a high-temperature region to a low-temperature region. This kind of migration is of central importance to many tribological applications. In some applications, such as mechanical seals, one may desire that the lubricant migrates in a predetermined direction induced by a temperature difference. In others, lubricant migration may need to be minimized to ensure that adequate lubrication is present where it is needed. Clearly, this concept has numerous applications in machinery from engines to compressors to mixers and in vital mechanical components, such as piston rings, bearings, hard disk, and so on. Investigation on the design, preparation, and thermocapillary migration behavior of lubricating materials are of vital importance for modern tribology systems.

Guest Editors

Dr. Qingwen Dai

National Key Laboratory of Science and Technology on Helicopter Transmission, Nanjing University of Aeronautics & Astronautics, Nanjing 210016, China

Dr. Philipp Grützmacher

Tribology Research Division, Institute of Engineering Design and Product Development, Vienna University of Technology, 1060 Vienna, Austria

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MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
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Message from the Editorial Board

Now more than ever, research is asked to deliver knowledge and technologies to solve the major challenges faced by our society. The development of new materials and devices for (without the ambition to be exhaustive) energy, health and food technology, together with the need for establishing processes that reduce the impact on critical resources and the environment, is indeed in the spotlight of most contemporary research. Surface science and engineering play a key role in this regard, with an incredible potential in delivering new and deep scientific understanding and technical solutions essential to solve most of the major societal challenges.
Coatings is a well-established, peerreviewed, online journal dedicated to the vibrant field of surface science and engineering. Coatings publishes original research articles that report cutting-edge results and review papers that make the point on the hottest research topics.

Editors-in-Chief

Prof. Dr. Wei Pan
State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science & Engineering, Tsinghua University, Beijing 100084, China

Dr. Emerson Coy
NanoBioMedical Centre, Adam Mickiewicz University in Poznań, ul. Wszechnicy Piastowskiej 3, 61-614 Poznań, Poland

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