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Tribology and Mechanical Behavior of Amorphous Carbon Coatings

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Message from the Guest Editor

The importance of carbon as a mechanical-tribological protective layer on sliding components and tools has constantly increased over the past several decades. The combination of wear protection and friction reduction even under critical lubrication situations makes carbon coatings unique. Diamond-like carbon (DLC) coatings have become indispensable in more and more applications. Based on the coating technologies PACVD, magnetron sputtering, pulsed or DC-arc, and HiPIMS, various types of amorphous hydrogen-containing and hydrogen-free, doped and undoped carbon coatings have been developed. From the beginning, insufficient adhesion, relatively high brittleness, and high residual compressive stresses have been the unwanted companions of the coating development. Adaptions of coating design by structural modification or doping lead to increasingly resilient coating systems to meet the mechanical and tribological requirements in practice. A particular goal of current coating development is to achieve low friction—even superlubricity—in combination with specific lubricants.

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Message from the Editorial Board

Now more than ever, research is called for to produce technologies and improve knowledge 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 at the center of most contemporary research. Surface science and engineering play a key role in this regard. Refining surfaces and their modifications provides new materials, architectures and processes with a huge potential to aid most societal challenges. *Coatings* is a well-established, peer-reviewed, online journal that focuses on the dissemination of publications in the field of surface science and engineering. *Coatings* publishes original research articles that report cutting-edge results and review papers on the hottest topics.

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