Special Issue

Coatings for Cutting Tools: Their Design, Manufacture, Performance and Optimization

Message from the Guest Editors

- Design and synthesis of advanced tool coating materials, including TiAlN, AlCrN, diamond, multi-component composite coatings, and nanostructured coatings.
- Technical development and optimization of PVD, CVD, and new deposition processes, such as high-energy ion beam deposition, plasma-assisted CVD, plasma-enhanced evaporation, etc.
- Studies on the bonding mechanism of the coating–substrate interface and the control method of residual stress, including bonding strength, thermal stress evolution, crack initiation, and failure behavior.
- Tool coating post-treatment processes and their effect on performance, including sandblasting, magnetic grinding, laser cladding reprocessing, energy beam-induced strengthening, etc.
- The application behavior of advanced coated tools in typical difficult-to-cut materials, including the wear resistance and cutting adaptability of superalloys, titanium alloys, carbon fiber composites, and other materials.
- Prediction and optimization of cutting performance of coated tools based on numerical simulations and experiments, including finite element simulations, cutting force/thermal analysis, coating failure modeling, etc.

Guest Editors

Dr. Tao Zhou

School of Mechanical Engineering, Guizhou University, Guiyang 550025, China

Dr. Hao Du

School of Mechanical Engineering, Guizhou University, Guiyang 550025, China

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Coatings
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
coatings@mdpi.com

mdpi.com/journal/coatings

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About the Journal

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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