Special Issue

Identification of the Impact of Tool Protective Coatings on Temperature and Heat Distribution in the Cutting Zone

Message from the Guest Editors

Machining is still the basic technique for manufacturing machine parts. Most of the tools used in the engineering industry are coated tools. The main task of using protective coatings is to reduce tool wear. Protective coatings primarily change the tribological interactions at the interface between the cutting tool and the workpiece. They also affect the amount of heat generated during cutting, and above all, the change in heat flows flowing from the decohesion zone of the material to the blade, to the chip and to the workpiece. High temperature in cutting is an unfavorable phenomenon because it promotes wear of the blade. Recently, the machine parts industry has been striving to miniaturize the manufactured elements, to create products with a complex shape and to use materials that are difficult to machine. Tools are being used more and more often in harsh conditions. Therefore, knowledge of the mechanisms of the impact of coatings on the cutting process, and especially on the amount of heat generated and its distribution in the cutting zone, is so important.

Guest Editors

Dr. Marian Bartoszuk

Faculty of Mechanical Engineering, Opole University of Technology, ul. Mikołajczyka 5, 45-271 Opole, Poland

Prof. Dr. Zhixiong Li

Department of Manufacturing Engineering and Automation Products, Opole University of Technology, 45-758 Opole, Poland

Deadline for manuscript submissions

closed (20 March 2025)

Materials

an Open Access Journal by MDPI

Impact Factor 3.2
CiteScore 6.4
Indexed in PubMed

mdpi.com/si/175190

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

mdpi.com/journal/materials

Materials

an Open Access Journal by MDPI

Impact Factor 3.2
CiteScore 6.4
Indexed in PubMed

mdpi.com/journal/materials

MDPI

About the Journal

Message from the Editor-in-Chief

Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

Editor-in-Chief

Prof. Dr. Maryam Tabrizian
1. Department of Biomedical Engineering, Faculty of Medicine and Health Sciences, McGill University, Montreal, QC H3A 2B6, Canada
2. Faculty of Dentistry and Oral Health Sciences, McGill University, 3640 Rue University, Montreal, QC H3A 0C7, Canada

Author Benefits

Open Access:

free for readers, with article processing charges (APC) paid by authors or their institutions.

High Visibility:

indexed within Scopus, SCIE (Web of Science), PubMed, PMC, Ei Compendex, CaPlus / SciFinder, Inspec, Astrophysics Data System, and other databases.

Journal Rank:

JCR - Q2 (Metallurgy and Metallurgical Engineering) / CiteScore - Q1 (Condensed Matter Physics)