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# Computational Materials Science and Surface Engineering

2009 • Volume 1 • Issue 4

QUARTERLY



**Editor-in-Chief – Prof. Leszek A. Dobrzański**

International Scientific Journal published quarterly  
by the Association of Computational Materials Science  
and Surface Engineering

## SCOPE

Computer-aided methods of modelling, simulation and prediction for designing new engineering materials and the technological processes of the manufacturing, processing and forming of their structure and properties in the whole volume and their surface and also the description of phenomena and phase transformations appearing in those materials and also the description of the research results in the field of the materials science and engineering and surface engineering, as well as solutions of real-life problems, in which it is necessary to apply computational materials science and computational surface engineering methodologies for achieving effective results and for solving tasks in materials and surface engineering, industrial management and administration, and technical education in any particular fields from macroscopic to nanoscopic scales (e.g. nanoscience and nanotechnology), including the following subjects:

### **Engineering materials:**

Metallic alloys; Tool materials; Superplastic materials; Ceramics and glasses; Carbon-based materials; Composites; Amorphous materials; Nanostructured materials; Nanocomposite materials and structures; Materials in micromanufacturing and nanomanufacturing; Electronic materials; Multifunctional and smart materials; Bioengineering and biomimetic materials; Materials for artificial organs and tissues; Engineering polymers; Novel applications of materials.

### **Manufacturing and processing of engineering materials:**

Casting; Powder metallurgy; Sintering; Plastic deformation; Heat treatment; Thermo-mechanical treatment; Thermo-chemical treatment; Thin and thick coatings and other methods of surface treatment; Welding; Advanced manufacturing technology; Machining; Laser treatment; Electron beam treatment; Processes for nanomaterials synthesis; Nanomanufacturing and nanotechnology; Micromanufacturing; Electronic packaging technology; Tissue engineering; Quality assessment; Biological and environmental aspects and cleaner production; Industrial management and organisation in the field of materials engineering and surface engineering; Societal and educational implications.

### **Engineering materials properties:**

Ductility and crack-resistance; Fatigue-resistance; Creep-resistance; Fracture mechanics; Mechanical, electrical and magnetic properties; Corrosion-, erosion- and wear-resistance; Non-destructive testing; Reliability assessment; Toxicity; Working properties of materials and products; Methods of research of structure and chemical composition of engineering materials; Electron microscopy; X-ray phase analysis; Materialography and quantitative materialography; Image analysis; Spectroscopic methods; Surface characterisation and metrology.

### **Methods of analysis and modelling:**

Statistical methods; Artificial intelligence methods; Expert systems; Genetic algorithms; Neural networks; Numerical techniques; Process system design; Mould flow analysis; Engineering design; Technological design; Materials design; Modelling of behaviour of materials; Materials and engineering databases; Computer aided materials selection; Computer aided materials design; Computer aided manufacturing; Computer-integrated material processing; Computer-aided learning and teaching.

Only papers positively pre-reviewed by at least two reviewers are published in the Journal.

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