Editorial

Massimiliano Barletta

Department of Mechanical Engineering,
University of Rome 'Tor Vergata',
Via del Politecnico, 1 – 00133 Roma, Italy
E-mail: barletta@mercurio.mec.uniroma2.it

Riccardo Polini

Dipartimento di Scienze e Tecnologie Chimiche,
University of Rome 'Tor Vergata',
Via della Ricerca Scientifica, 1 – 00133 Roma, Italy
E-mail: polini@uniroma2.it

Biographical notes: Massimiliano Barletta teaches Computer Aided Manufacturing at University of Rome 'Tor Vergata' since 2004. He develops research activities concerning the surface finishing and coatings of organic and inorganic substrates. It got four international patents concerning coating technologies. He published about 85 papers, 45 papers were published on international journals like *Thin Solid Films*, *Surface & Coatings Technology*, *Diamond and Related Materials*, *Progress in Organic Coatings*, *International Journal of Machine Tools and Manufacture*, *International Journal of Material Processing Technology*, *Optics and Laser in Engineering*, *Measurements*, *Metal Finishing* and more.

Riccardo Polini is Assistant Professor of Materials Chemistry. He is responsible for industry funded research projects and is involved in several international collaborations with prestigious academic and R&D laboratories. His research activities are mostly focused on surface engineering and on synthesis, processing and characterisation of advanced ceramic materials. He is acting as a Referee to several international scientific journals and is the author of more than 70 papers published in international peer-reviewed scientific journals.

The manufacture of highly stressed components requires an optimal choice of the design strategy, an appropriate selection of the raw materials and the proper assessment of the production technologies based on the knowledge of the product end-uses and its real loading conditions. Indeed, the material surfaces always play a crucial role; at any time such components must undergo vibrating loads or, alternatively, erosion–corrosion phenomena due to sliding contact or aggressive environments. In fact, they permit the achievement of high overall performance of the end-product without recurring to high cost raw materials or to complicated composite design techniques.

In this respect, the usage of tailored surfaces and related technologies are becoming even more attractive in mechanical engineering and in several other industrial segments.

In fact, customised surfaces often allow to fulfil manifold requirements in terms of resistance to static and dynamic loading conditions and in respect to wear, erosion and corrosion with convenient manufacturing procedures and 'easy-to-automate' processing technologies.

This is, therefore, the context in which the technical papers contained in this volume address many topics concerning the definition of tailored surfaces and the related manufacturing technologies. Such works further establish the development and concept phases of tailored surfaces and related technologies as fundamental steps able to definitely improve the performance of high performance components without too much increasing their production costs. In particular, the works here reported touch aspects concerning the application of Ni-based electroless coatings to prevent corrosion, erosion and wear damages, the application of thin coatings in power generation, the employment of thermally sprayed coatings for corrosion protection purposes and, finally, the usage of advanced technologies (laser, fluidised bed, shot peening, …) to simplify the machinability or improve the overall surface properties of high-performance components.