
Editorial

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Biographical notes: Fabrizio Quadrini Graduated with Honours in Material Engineering at the University of Naples 'Federico II' and received a PhD in Material Engineering from the University of Rome 'Tor Vergata'. Since 2002 he is researcher at the University of Rome 'Tor Vergata' and he holds a course of 'Manufacturing systems technology'. His main scientific interests deal with laser processing of metals and plastics, forming and machining of metals and plastics, polymer matrix composites and nanocomposites. He is author of about 60 papers accepted in international journals and conferences.

Coating engineering is becoming the main factor for the development of new processes and products. There are two important ways of thinking coatings. In the first case the coating is the skin of a core material. Coating and core materials can differ significantly and their combining provide additional performances in comparison with the alone core materials. A typical example is the hard coating of metals. The skin hardness enhances the abrasion and corrosion strength and the core material provides stiffness and toughness to the final structure. The second way of thinking coating depends on the market, and is strictly linked to the concept of "Aesthetic technology". As the external surface is the link between the consumer and the product, the coating technology is becoming the way to give to poor materials the appearance of high performance materials.

Nowadays, the need of high performance coatings is leading to new processes and new products and the industrial demand is always increasing. Dealing with well-established technologies, the performance of coatings has to be driven toward the highest levels. A lot of challenges are still to throw. Anti-scratch coatings for plastics and high-life tribological coatings for metals are only two examples.

The purpose of this special issue on 'High performance coatings for metals and plastics' is to collect research experiences and innovations in the field of the coating engineering both for organic and metallic substrates. A special care was taken to put in evidence the effect of the processing technologies on the final properties of the coatings. After the peer review, eight papers were selected for inclusion in the special issue. The first paper is a review on laser cladding of metals. The following six contributions are research papers on synthesis and characterisation of coatings for metals. Innovative and traditional technologies are discussed, from hard chromium electroplating, to thermal spraying, PVD and detonation gun spraying. The final paper deals with nanocomposite coatings of metallic and plastic substrates. In all the proposed research studies a strict link is present between the improvement in the coating properties and the validation of suitable measuring techniques. In fact, the enhancement of the performances keeps level

with the development of robust and reliable characterisation techniques for the evaluation of those performances.

The guest editor wants to thank all the authors for their contribution and all the referees whose experience was essential for the achievement of a high quality of the special issue.