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Editorial

JTST Special ''Euromat'' Issue

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Euromat, the European Congress on Advanced Materials and Processes, organized by the Federation of the European Materials Societies, is currently one of the major, if not ''the'' major, scientific event for material scientists in the world. The 2007 edition was held in Nuremberg, Germany, from September 11 to 13, in conjunction with a materials science and engineering exposition. More than 2300 papers were submitted, and about 2000 were presented. These presentations were arranged in 6 topics and 58 sessions among which was the ''Processing of Materials'' (topic 3), and within this topic ''Coatings and Surface Engineering''. The ''Thick Coatings Developments and Technology'' session, co-chaired by K. Möhwald of Leibniz University, Hannover, Germany, and myself, attracted about 45 presenters. When adding related papers on ''Industrial Applications'' and ''Coatings for High Temperature Applications'', we had 96 papers to choose from that dealt with ''thick coatings'', and we included 6 of them in this issue of JTST.

The variety of subjects was fairly large, but some aspects of surface engineering appeared to be more preeminent. This is the case for the nanostructured coatings, of course, but also for hard coatings for tooling, metallic dip coatings, TBC's, and also for a rather new technique, directional PVD using supersonic nozzles.

Of course the papers selected for this issue of JTST are not fully representative of the content of Euromat as they are focused on thermal spray, but at least one of them will try and open a window on some other ways of using plasmas, namely the Pulsed Plasma Electrolytic Carbo-Nitriding, which uses a ''plasma'' developed by a high voltage applied to a salt bath. Other Euromat papers in this issue of JTST include a paper by Schein et al. dealing with the tomographic investigation of plasma jets produced by multi-electrode plasma torches. Results allow a good understanding of the behavior of these new torches, showing the advantages and the drawbacks of the different architectures of these tools and eventually, how to use them. A paper by Kanta et al. presents a comparison between the artificial neural network and the fuzzy logic approaches developed by the authors in order to predict in-flight particle characteristics and the subsequent coating properties and also in order to allow the set up of new process control tools. The other papers are concerned with different thermal spray techniques. Sanchez et al. have deposited, using APS, nanostructured alumina-titania powders and they observe a positive effect on hardness and wear resistance of the coatings. Bobzin et al. have developed an iron based feedstock material to be used with the transferred wire arc technique to produce nanocrystalline coatings for cylinder bores of light alloy automotive engine blocks. Li et al. have successfully introduced high amounts of a secondary hard phase (TiN) in an Al base alloy matrix using cold spray and they observe a positive effect of the hard phase on the cohesive strength of the deposits.

This selection of papers from a highly multidisciplinary meeting shows the extraordinary vitality of thermal spray research and the place it gains year after year in the landscape of surface engineering. The next Euromat congress will be held in Glasgow, Scotland, from September 7 to 10, 2008.

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