

MATHEMATICAL MODELS AND SIMULATION TOOLS FOR FUNCTIONAL COATINGS

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ABSTRACT

Modelling supported development of innovative products is currently a key aspect of successful design and implementation of new materials, systems and processes for the European industry. One particular challenge in this field is the support of sustainable materials in engineering, medical and biological applications.

In particular, materials surfaces degradation under in-service conditions is a significant problem. Surface defects induced by aggressive environments often lead in the longer term to materials degradation, (in-)direct damages and material failure. The application of functional protective coatings is the most common and cost-effective method to improve resistance and durability of surfaces and hence materials. However, the development and reliable validation of effective functional coatings for specific application areas is highly time and resource consuming. These issues can be solved effectively by using modelling approaches and the creation of appropriate knowledge transfer technologies.

This Mini Symposium is focused on modelling approaches at all scales dealing with challenges in the area of functional-coatings-by-design, including aspects of experimental data integration. The main target area are functional coatings used in engineering applications. The Mini Symposium is relevant for modelers working in industry and academia targeting different aspects of functional coatings.