

## **Symposium 33:**

### **Multifunctional Coatings for Structural, Energy and Environmental Applications**

#### **-JFCA/ADCAL and Cross-sectoral Research cooperation of Ceramic Coating support Symposia-**

This symposium will provide an open forum for scientists, engineers, and practitioners from around the world to discuss the latest advances in coating technologies which can give totally new or markedly improved functions onto materials surface in terms of physical, mechanical, thermal, chemical, optical, electrical, electronic, and/or magnetic properties. These functional coatings include thin film technologies such as PVD, CVD, and sol-gel methods, and thick film technologies such as thermal spray, suspension/solution precursor spray, cold spray, and aerosol deposition. Thermal and environmental barrier coatings for ceramic matrix composites, inter metallics and advanced superalloys to enhance the environmental stability and durability of aerospace and land-based gas turbines are also of interest. Particular emphases are on the integration of multilayered coatings, component design and performance through multi-scale modeling and experimental validation. The goal of this symposium is to identify current key issues, effective approaches, and future outlook for functional coating technologies and applications through comprehensive discussion on the following proposed topics.

#### **<PROPOSED SESSION TOPICS>**

- Innovative coating technologies for various industrial products (automobiles, electronic devices, mechanical parts, etc.)
- Thermal and environmental barrier coatings
- Coatings resistant to CMAS, oxidation, corrosion, wear, erosion, and tribological loadings
- PVD, CVD, sol-gel technologies, etc.
- Thermal spray, suspension/solution precursor spray, cold spray, aerosol deposition, etc.
- Coatings for new functional applications
- Functionally graded coatings, nanostructured and multifunctional coatings
- Interface phenomena, adhesion and other fundamentals of coatings
- Technical issues and potential solutions of surface related properties and processes in industries
- Next generation production methods for surface engineering
- Surface modification for functional coatings
- Multi-scale modeling of coating properties and life predictions
- Materials and coatings database and artificial intelligence-based approach
- Advanced characterization and non-destructive evaluation methodologies for coatings

#### **<ORGANIZERS>**

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#### **<INVITED LECTURES>**

Tentative invited lecture information is posted in the following URL;

[http://www.ceramic.or.jp/pacrim13/list\\_of\\_invited\\_speakers.html#33](http://www.ceramic.or.jp/pacrim13/list_of_invited_speakers.html#33)