

Mini-Symposium Title: FGMs for Battery Packaging

Organizer:

Dr. Fei Chen, State Key Lab of Advanced Technology for Materials Synthesis and Processing,
Wuhan University of Technology

Description:

The batteries are of great importance for portable electronic devices, electric vehicles and stationary energy storage applications. In general, batteries are composed of a variety of materials, such as electrode, electrolyte, membrane and packaging materials. With the continuous technological innovation, various new batteries such as liquid metal battery and others have been developed. Compared with conventional batteries, these new batteries place more stringent requirements on battery packaging materials and technologies due to the active metal, high-temperature ($>300^{\circ}\text{C}$), corrosion operating environments and others. The battery packaging parts need to have structural and functional characteristics while meeting long time sealing, which reliability directly affects the battery's performance and its service lifespan. Functionally Graded Materials (FGMs) are characterized by spatially varied microstructures created by non-uniform distributions of material phases with different properties, sizes and shapes. These materials can work at extremely high temperature and still maintain the structural integrity of its components due to the special microstructures, which have a great application potential in the field of battery packaging. According to the battery packaging needs, combined with the optimization of materials composition, structural design and fabrication process, functionally graded materials will achieve the purpose of long time sealing, and have certain strength, insulation, corrosion resistance and others characteristics.