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IAPME Seminar

New Applications of Special Carbon Materials

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Date: 13/12/2023; Time: 10:00 – 11:00; Venue: N23-4018

Special carbon materials are a type of materials with special structures and applications prepared by non-traditional processes, with diverse structures and functions, such as pyrolytic graphite, carbon nanotubes, diamond, carbon composite materials, etc. We prepared annealed pyrolytic graphite (APG) by a CVD-PSHT (pre-stress heat treatment) method and isotropic pyrolytic graphite (IPG) by a CVD method. According to its high density and perfect graphite layer structure, APG performs ultrahigh thermal conductivity, more than 1700 W/m.K. We could synthesize APG materials in different shape and size, such as APG plates with thickness from 0.3 to 5mm and tubes with 10mm thickness, and the APG/metal composites perform light weight, high safety and more than 1000 W/m.k thermal conductivity. As a new material for the photoelectrode, IPG reveals the merits of high electrical conductivity, large work function and good resistance to high-temperature treatment and embrittlement in reductive atmosphere for superior photoelectrodes compared with widely used conductive substrates such as fluorine-doped tin oxide (FTO) and metal foils. IPG is an alternative and attractive choice of constructing efficient photoelectrodes via carbon-based conductive substrates for PEC water splitting.



Prof. **Shuo BAI** is a professor at Institute of Metal Research, Chinese Academy of Sciences. He received his Ph.D. in materials science at IMR, CAS in 1999. His current research interest focuses on the preparation, properties and applications of special carbon materials, such as pyrolytic graphite and their composites. He has published more than 60 peer-reviewed papers and has authorized more than 30 patents. Several special carbon materials developed by him have been successfully applied in the electronics, aviation and aerospace fields.