**Graphene Electrode of Porous Structure for Supercapacitor and Battery Application**

Jie Tang

1*National Institute for Materials Science, Tsukuba, Ibaraki 305-0043, Japan*

Graphene offers a new opportunity to boost the performance of supercapacitors. However, the individual graphene sheets tend to restack together due to the van der waals forces between them, which often cause significant decrease in the electrochemical active surface area as well as the inter-graphene channels accessible to the electrolyte ions. We have explored serveral strategies including uses of single-walled carbon nanotubes and ionic liquid as spacers for graphene sheets to reduce the agglomeration and found that the electrochemical properties of the graphene electrode were indeed much improved. We also have successfully assembled the two-dimensional graphene nanosheets into hollow spheres using polystyrene spheres as template. Compared with traditional graphene materials, the as-prepared graphene hollow spheres can lead to more free space between spheres to result in larger accessible surface area for ion adsorption. The electrochemical characterization of our recent graphene supercapacitors and battery application will also be presented.