



3rd International Nanotechnology Conference & Expo

May 7-9, 2018 Rome, Italy

Ultrathin Graphdiyne Nanosheets Grown In Situ on Copper Nanowires and their Performance as Lithium-Ion Battery Anodes

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High-quality and ultrathin graphdiyne nanosheets (averaged thickness of 1.9 nm) and nanotubes are first prepared in large-scale using free-standing Cu nanowires as catalyst, forming good 3D continuous network. The crystal boundaries of Cu nanowire are first observed to be highly reactive for catalyzing the growth of graphdiyne nanosheets, giving us some inspirations for preparing more high-quality graphdiyne. Such ultrathin graphdiyne nanosheets show attractive overall performances, and deliver a high capacity of 1380 mAh/g and outstanding rate-performance, thereby exhibiting great potential for high-energy density and high-power density lithium ion batteries.

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Biography:

Zicheng Zuo received his PhD degree in 2011 in ICCAS. He is an assistant professor in prof. Yuliang Li's group in the Institute of Chemistry, Chinese Academy of Sciences (ICCAS). His research interest is focused on the synthesis of high-quality 2D graphdiyne and its applications in improving the interfacial stability in high-energy-density lithium secondary batteries.