

Study on the Morphological Changes of Dendritic Copper Powder Fabricated by Galvanic Displacement Reaction

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The copper metallic materials have been intensively studied due to their excellent performance in catalysis, electrodes, and EMI shielding materials. It has the wide potential applications in sensors, batteries, electrochemical capacitors, and catalysis. In the structural point of view, the dendritic structure has many superior properties, such as large surface area and good conductivity. Therefore, it is worthy of exploring formation mechanism of dendritic copper materials.

In this presentation, we report a simple method for fabricating copper powders with dendritic morphology at room temperature. In order to optimize the dendritic structures, the galvanic displacement reaction and hydrogen evolution reactions are employed at the same time. In addition, we have carefully analyzed the formation mechanism of Cu dendritic structures on the basis of affect of concentration, termination time, anion concentration, and additives.