

### Fabrication of silver-coated-copper dendritic powders used for electromagnetic interference shielding

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With the fast development in telecommunication, more and more electronics based on electromagnetic wave (EM) is coming into human daily life. The metal film is effective in EMS, but its heavy weight and mainly reflection in certain range of EM induce large efforts devoted to low density, broad bandwidth, and more EM absorption materials. According to many researches, some materials in the shapes of the rod, needle, and dendrite morphology are more effective in EMS than the spherical powders.

In this work, the low density and low cost silver-coated-copper dendritic powders are facily synthesized using the two-stepped galvanic displacement reaction. At first, the copper dendrites are obtained by galvanic displacement reaction of aluminum foil in copper solution. Subsequently, the silver coating is carried out by another galvanic displacement of surface copper in silver solution. The effect of chemical components in solution, process temperature, and pH value on the copper dendritic morphology has been evaluated. To prevent the copper dendrite surface from oxidation in air, the surface treatment with ammonium was found to be very effective.