

Centrifugal Atomisation: Influence Material of the Disk and Content Oxygen in the Chamber on Solder Powder Properties

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Abstract

For solder pastes production the powder with narrow particle size distribution, low oxides content and spherical particle shape are required. Here the melt is formed by the rotating disk as a thin film and atomized with a controlled oxygen content in the chamber. The properties of the powder produced by this technique are mainly determined by such parameters as the oxygen content in the chamber, the construction of the disk and its material properties. As a procedure the disk made from different materials (stainless steel, titanium, carbon steel) with different construction was tested. The disk materials have a different wetting for molten solder. The results of the effect of the oxygen content in the range of 100-2000 ppm on powder oxidability and its sphericity were obtained. It is shown that the oxygen content in the chamber less than 300 ppm is highly recommended for production of a spherical powder with oxidability less than 100 ppm.

Characteristics of (Fe, M)S₂ (M=Mn, Co, Ni, Mo) Composite Fabricated by MCP

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Abstract

With rapid advances in mobile devices and a great interest in the development of electric and hybrid vehicle, the needs of new materials for high energy density-rechargeable batteries are getting grow. Among various candidates for cathode materials, natural pyrite (FeS₂) was well known to be an applicable material because of their high theoretical capacity, non-toxic, and low cost. But cyclic property of natural pyrite is poor at room temperature due to the limited of compositional flexibility and impurity. In this study, the (Fe, M)S₂ (M=Mn, Co, Ni, Mo) composites for cathode materials in Li/FeS₂ battery were synthesized by MCP (Mechano-Chemical Process). The effect of transition metal addition on the characteristics of FeS₂ composites were investigated using XRD, SEM, Particle size analyzer, CS analyzer, and Electrochemical methods.