

Controlling microstructure and adhesive properties using capillary-driven network in Li-ion battery anode slurries

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A capillary suspension is a novel concept for modifying the microstructure of a suspension. We exploited this concept to control the internal structure of an aqueous battery slurry and consequently enhanced its adhesion properties. We recently investigated using battery slurry based on the capillary suspension that the network structure developed by the secondary fluid changes the distribution of particles as well as the other component. Especially, the distribution change of SBR binder particles even changed the adhesive properties of the final product. In order to control particle distribution using the concept of capillary suspension, we thoroughly examined the interaction between the secondary fluid and SBR binder particles in the capillary suspension battery slurry and suggested a way to precisely design the microstructure of industrial slurries using the concept of capillary suspension.