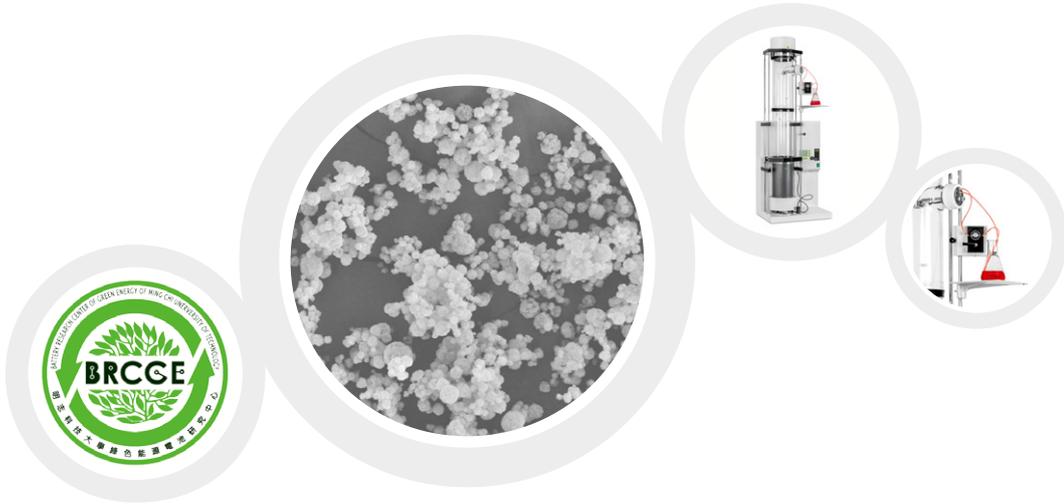


Case Study

Nano Spray Dryer for ceramic applications



Customer: Battery Research Center of Green Energy, Taiwan

The Battery Research Center of Green Energy (BRCGE) in Ming Chi University of Technology (MCUT) is a unique organization focusing especially on the research and development of future green energy technologies for industries.

Application: Synthesis macro/nano spherical SiO₂ composite for Lithium Ion Battery applications

Spray drying is an established method to produce granulated material by converting a suspension into solid macro/nano spherical particles with precise specifications. If the used suspension consists of nanoparticles, the resulting agglomerated particles comprise nanoparticles to form a nanostructured powder in the submicrometer/micrometer size range. Through this approach, the properties of nanoscale particles are preserved into micrometer particles. In energy technology research, those nano-size SiO₂ powders are important to allow a faster Li+ diffusion across the particle. They enable a macro/nano spherical morphology without inducing high irreversible capacity loss, but also maintains high tap-density.

Equipment: Nano Spray Dryer B-90 HP

The possibility to prepare submicron sized particles out of an aqueous or organic-based suspension and the multiple accessories available make the Nano Spray Dryer B-90 HP an appreciated technology to produce fine hierarchical particles for energy storage applications (LIB).

Benefit / Conclusion: Unprecedentedly fine particles

The nano size dimension, the spherical shape and the macro/nano hierarchical structure of the granule powders is a winning point for the processing of advanced energy materials. The present research aiming to shape an active material can easily be pursued to prepare macro/nano SiO₂ composite powders (used as the anode in LIB) thanks to the Nano Spray Dryer B-90 HP.

"We are very happy with the Buchi Nano Spray Dryer B-90 HP. It allows us to synthesize many different hierarchical macro/nano composites that we will be able to use on Lithium ion battery (LIB) in near future."

Dr. Chun-Chen Yang, Director of the Center, Battery Research Center of Green Energy
