

---

## Powder Product Design for Enhanced Flowability Tutorial - Seminar

By Dr. Kerry Johanson  
Material Flow Solutions, Inc.

---

### What you will learn:

The new frontier in product design is developing knowledge bridges between particle scale interactions and bulk behavior. The current trend in industry is to add small amounts of a very fine or nano-particles to already existing products in hopes that the combination of particles will exhibit some enhanced behavior. A science is developing around the addition of these small particles and the appearance of certain chemical or physical behaviors in the bulk material. Yet our knowledge of how modifications on the particle scale will affect the bulk flow properties is lagging behind our current product development understanding. This workshop examines the relationship between the particle scale properties, the bulk flow properties and the flow behavior in typical processes. Attendees will learn how to design powder and particulate materials from a bottom up point of view, to create products with a given flow behavior. The effect of moisture content, flow additives, particle size, particle size distribution, poly-dispersity, shape, and mixture structure will be addressed from both a theoretical and experimental point of view. The information presented will help those faced with designing powder products for use in blending, agglomeration, material handling, and segregation prevention unit operations. Scale-up issues as well as “right the first time design” will be addressed.