Dry powder inhalation continues to be the demanding measure of drug administration in pharmaceutical industry. The number of asthma and chronic obstructive disease incidents are rising and the improvement of the therapies remains the main concern for the treatment. Generally, dry powder formulations are comprised of the micronized drug particles and coarse carrier particles in a blend form. Efficient delivery of drug particles is most critical to the successful development of dry powder formulation. This talk introduces the applications of particle engineering in the design and development of drug carriers for improved delivery efficiency.