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A new and versatile method for preparing crystalline drug nanoparticle formulations

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The birth of the nanoparticle (nanos) drug delivery field was seen over 20 years ago with the advent and application of simple oral crystalline nanoparticle formulations. This effective approach for enhancing oral absorption using aqueous suspensions of drug particles milled to sub-micron size is now employed in several marketed drug products. Originally, relatively large amounts of drug were required to make even prototype nano formulations. This made it difficult to investigate nanos in drug discovery or even early development space, where available drug quantities are limited. At Merck we have developed an innovative new method for generating nanos, using a LabRam[®] high-frequency resonant mixer. This unique application of a LabRam allows us to prepare nanos at a wide range of scales, from stabilizer high throughput screen quantities in a 96 well plate format to liters. With this capability, we can now test nanos during the drug discovery lead optimization stages all the way to the preparation of long-term toxicology supplies and even clinical supplies. This lecture describes this new preparation method, which also has further applications to other formulation methodologies such as liposomes and nanoemulsions.

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