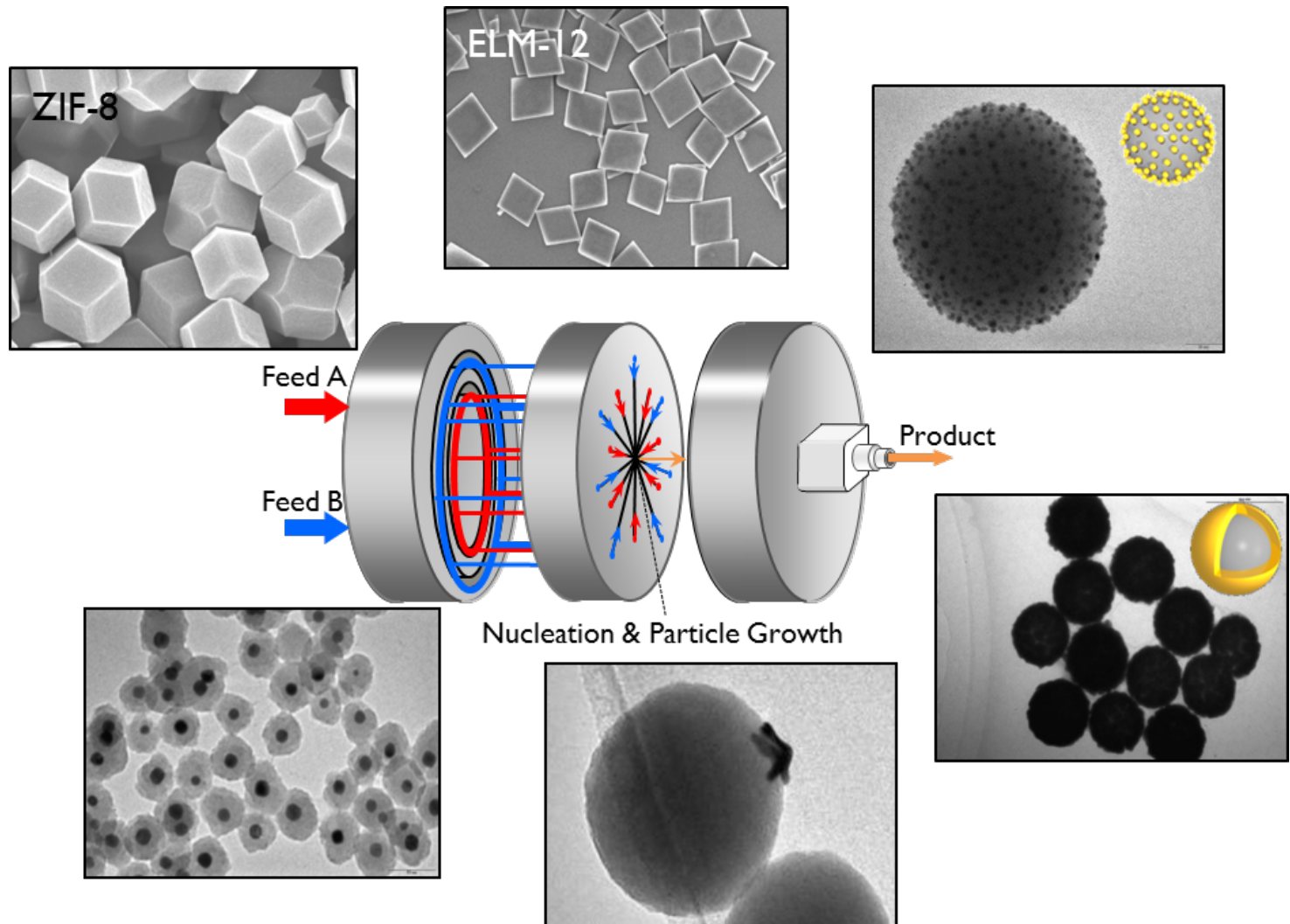




Flow Microreactor Synthesis of Core-Shell Nanoparticles and Porous Materials

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Recently, significant progress has been made in research and development of core-shell type particles. Their main feature is a synergetic property coming from core-shell materials and interfacial phenomena, which cannot be attained by normal homogeneous particles. To exploit full potential of those particles, their size and shape must be monodispersed. This is also the case with porous metal organic framework particles because their unique adsorption property can depend on the particle size and shape. Looking ahead to practical use of these functional particles, flow synthetic process is thus most favorable for mass production. In most of the approaches, however, the particle preparation is operated in a batch type process, in which concentration and temperature distributions are unavoidable, resulting in polydispersed particles especially when the reaction is faster than mixing. To solve these problems and realize both precision synthesis and high throughput, a microreactor is a promising candidate. In this talk, I will introduce the microreactor that we use and its application to the synthesis of silica-gold core-shell composite particles and porous metal organic frameworks.