

Environmentally Responsive “Smart” Particles

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By

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The International Fine Particle Research Institute (IFPRI) has commissioned a comprehensive critical literature review of “smart” particles that are responsive to their local chemical and/or physical environment. The initial focus is smart in-situ particles for process characterization, though the review is not limited to this application. Application examples include carbonless copy paper particles, particles for medical diagnostics, or thermally sensitive particles. Environmental forces to consider include, but are not limited to, mechanical force, electromagnetic radiation, temperature, pH, or other external triggers or stimuli. This presentation summarizes the scope of the review, highlighting examples related to the various triggers and stimuli from both commercial and academic examples. Smart particles used for commercial and experimental applications are also included. Each example, when applicable and information available, includes particle operating principles, detection, analysis, control methodologies, size range, response range, response sensitivity, and how they are synthesized/manufactured. This brief overview is offered as a supplement to the original outline supplied in January, and a chance for IFPRI feedback and guidance for the composition of the final review.