

## **HONORABLE MENTION TECHNOLOGY**

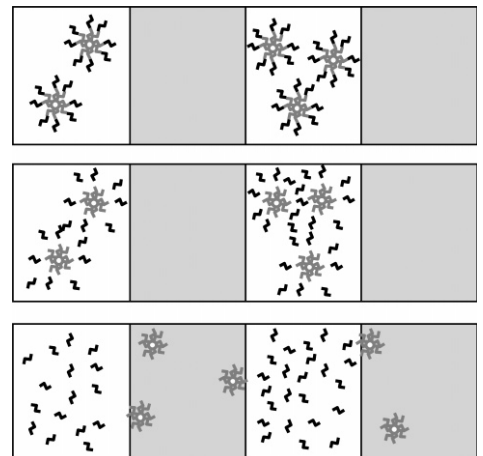
### **Thermally controlled Particulate Core Migration within Polymer Matrix**

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Engineered materials that respond to a stimulus—such as a change in temperature, pH, or light—allow the manipulation of certain properties of the material, including impact strength, conductivity, magnetic, electronic, and optical properties. This invention allows for the control of a core molecule (your own additive surrounded by polymeric ligands) via a change in temperature. With the application of heat, the core molecule migrates to the surface of the polymer matrix in which it is embedded. The core may be any of a wide variety of nanoparticles, including dyes, microelectromechanical system (MEMS) structures, or capsules full of active additives. The versatile nature of the core makes this technology applicable to many fields, from food processing to building materials.

Features include:

- Migration temperature can be adjusted for specific applications
- Time factor of migration can be adjusted
- Core can range in size from 1 to 1000 nanometers (linear dimension along the long axis of the core)
- Requires no solvent
- Testing has been performed on a variety of core molecules: gold and other metals/metal oxides; silica; silicon; fullerenes; nanolatex; epoxidized rubber; polystyrene nanospheres; liquids encapsulated in a polymer shell



Potential markets & applications include:

- Advanced building materials—scratch-resistant, germ-resistant surfaces
- Food processing
- Paints and varnishes
- Thermal monitors
- Cosmetics
- Any application involving a filler material