

Ceramics for Symbiosis with Global Environment

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Ceramic Components for Thermal Management and the Exergy Analysis

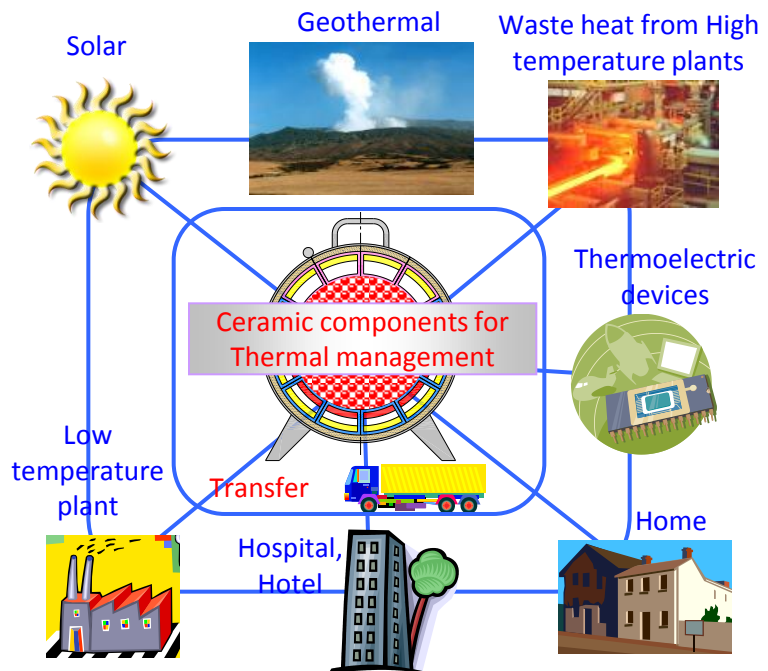
In order to use the unused energy such as solar, geothermal and plant waste heat effectively, thermal management technology which can control heat energy is essential. In our laboratory, ceramic components with high heat-resistant and excellent corrosion resistance for the thermal management have been developed, as well as the study of index to quantify the efficiency, based on the concept of exergy. Our final goal is to construct thermal cascading network system based on aforementioned technology.

Description of R&D

1. As heat storage components with high-energy density and light weight, ceramic encapsulated structured PCM (Phase Change Material) has been developed.
2. Research of a novel high-temperature insulation materials obtained by combination of design and materials.
3. Studies on index to show throughout the life cycle based on the exergy concept

Originality and Creativity

1. Heat storage body and the method (Hideki Kita, JP Pat.2010-261101)
2. Development of a Large-size Heat Transfer Container Based on Ceramic Integration (Hideki Kita et al., *International Journal of Applied Ceramic Technology*-in print)
3. Exergy Consumption through the Life Cycle of Ceramic Parts (Hideki Kita et al., *International Journal of Applied Ceramic Technology*, vol.5, No.4, pp.373-381 (2008))



Thermal Management Components
(Storage, Carry, Insulation for Heat)
used in Thermal Cascading Network