

Heat Transfer Management with Porous Media

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Physical and chemical properties of porous media can be engineered, which makes porous medium an ideal material for heat transfer management by different modes of heat transfer, conduction, convection and radiation. For instance, it is possible to manufacture porous medium with high or low thermal conductivity. Also, porous media can be found or engineered with different porosity, permeability, etc. High porous materials have large surface area per unit volume, which makes porous medium an effective method for enhancing heat, mass and chemical reactions.

In this presentation, I will discuss many techniques used for heat transfer and temperature distribution managements, such as heat transfer enhancement, heat transfer de-enhancement, temperature controls through the media. Those techniques have been used in industry or promising to be used in practical applications. A numerous applications, such as heat transfer enhancement in heat exchanger, environmentally friendly combustor, etc.