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(54) **SYSTEM AND METHOD FOR ENHANCED HEAT TRANSFER USING NANOPOROUS TEXTURED SURFACES**

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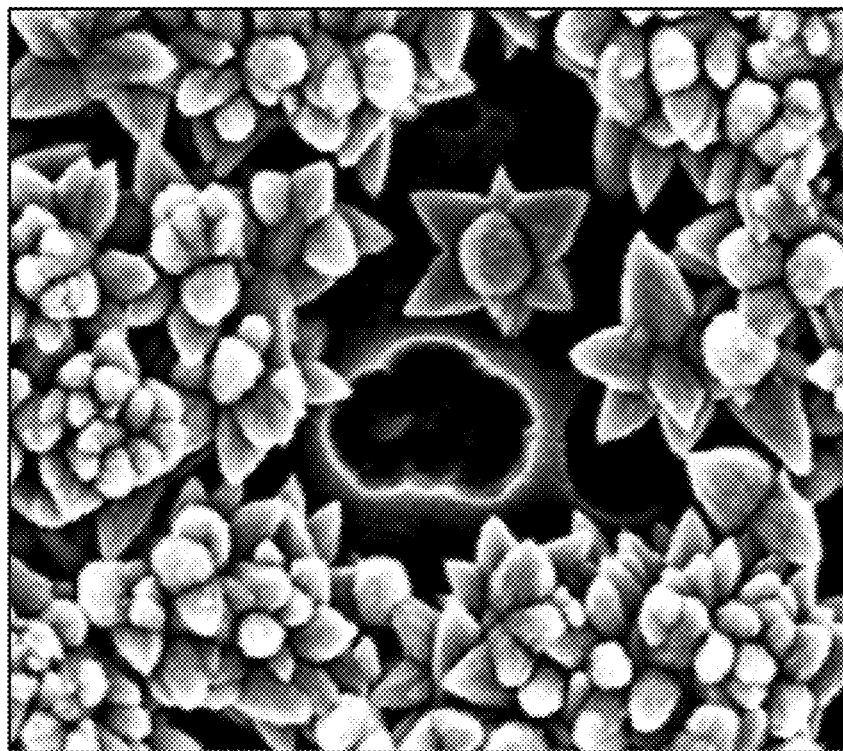
(57) **ABSTRACT**

A system and method for performing heat dissipation is disclosed that includes contacting a heat transfer liquid with a heat exchange surface having raised hydrophilic nanoporous nanostructures disposed adjacent a central core upon a substrate. The heat transfer liquid forms a preselected contact angle when placed on the heat exchange surface. The raised nanoporous nanostructures define channels, interconnected pathways, and voids within the nanoporous nanostructures. The nanoporous nanostructures have additional surface irregularities upon the nanostructures themselves. The nanostructures are preferably formed by depositing metal oxides or other materials upon a substrate using a Microreactor Assisted Nanomaterial Deposition (MAND) process.

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