

Use of High Magnetic Field to Control Microstructural Evolution in Metallic and Magnetic Materials. Use of High Magnetic Field to Control Microstructural Evolution in Metallic and Magnetic Materials.

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Technology Summary

Current methods of spreading heat require thin highly-conductive materials to place between a hot source and the heat sink to uniform the thermal profile. These spreaders range from expensive diamond to copper to a product called Grafoil®. Grafoil® is made from natural flake graphite by exfoliation and then compaction. This process, while fairly inexpensive, requires the mining of graphite from the earth, and a chemical or thermal exfoliation. Our process for producing this thin highly oriented graphitic material eliminates these two parts of the process. We have found that the inside of scrubbers of coal fired power plants, there is a deposit of highly oriented graphite that is currently scraped from the scrubbers and discarded as waste (a source of cost). By using this highly oriented flaked graphite, and simply pressing into a flat structure, a thin, highly conductive material can be fabricated at extremely low costs. This material can be used as a spreader plate for heat sinks, thermal interface pad (it is compliant), and in other thermal management applications.

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