

SiCp/Al复合材料的SPS烧结及热物理性能研究

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摘要 采用纯粉末, 通过SPS烧结制备了组织均匀、致密且体积分数高的SiCp/Al电子封装材料.

通过对SPS烧结现象的研究, 认为该复合材料的SPS烧结过程属于反应性烧结, 大部分收缩在极短时间内完成;

另外对SiC体积分数和SiC颗粒尺寸对热导率、热膨胀系数的影响进行了研究, 发现SiC体积分数越高, 复合材料的热导率和热膨胀系数越低; SiC颗粒粒径增大, 复合材料的热导率增高, 而热膨胀系数减小.

关键词 [电子封装](#) [SPS](#) [热导率](#) [热膨胀系数](#)

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Fabrication and Thermophysical Properties of SiCp/Al Metal-matrix Composites by SPS

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Abstract SiC particles, pure aluminum powder and silicon powder were applied to prepare SiC particles reinforced Al-matrix composites for electronic packaging application. Al-matrix composites reinforced with SiC particles were fabricated by SPS. The composites were dense and SiC particles distributed homogenously in Al-matrix. According to the investigation of SPS process, the sintering process of the composite, belongs to a reactive sintering, the majority of sintering shrinkage can be finished in a short period. Effects of SiC volume fraction and particles sizes on thermal conductivity and coefficient of thermal expansion were investigated. The results indicate that thermal conductivity and coefficient of thermal expansion decrease with the increase of SiC volume fraction, and thermal conductivity increases but coefficient of thermal expansion decreases with the increase of SiC particles sizes.

Key words [electronic packaging](#) [SPS](#) [thermal conductivity](#) [coefficient of thermal expansion](#)

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