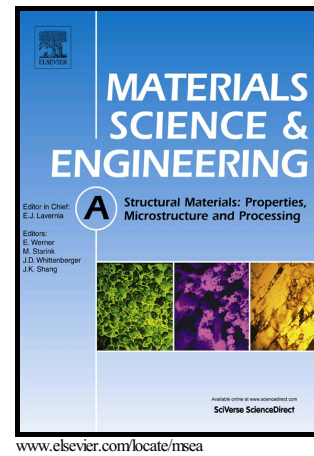


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**High-temperature mechanical properties and thermal cycling stability of Al-50Si alloy for electronic packaging**

Zhiyong Cai<sup>a,b</sup>, Chun Zhang<sup>a,\*</sup>, Richu Wang<sup>b</sup>, Chaoqun Peng<sup>b</sup>, Xiang Wu<sup>b</sup>, Haipu Li<sup>a</sup>

<sup>a</sup>School of Chemistry and Chemical Engineering, Central South University, Changsha 410083, China

<sup>b</sup>School of Materials Science and Engineering, Central South University, Changsha 410083, China

\*Corresponding author: zchun614@163.com

**Abstract:** With the rapid development of electronics industry, there is an increasing demand for high performance electronic packaging materials. Furthermore, the high-temperature performance and thermal cycling stability are required owing to the harsher service environment. In this work, Al-50Si alloy was prepared via rapid solidification/powder metallurgy technique, and the tensile properties at elevated temperature and the thermo-physical properties after thermal cycling were investigated. The results show that the tensile strength decreases gradually with the increase in the environmental temperature. Whereas, pullout of the Si particle is seldom observed in the specimens at elevated temperatures owing to the strong interfacial bonding. With the progress of thermal cycling, the coefficient of thermal expansion (CTE) is stable, but the plastic strain increases rapidly at the initial stage. However, the thermal conductivity decreases significantly with the increase in the temperature or the number of thermal cycles. This phenomenon is mainly ascribed to

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