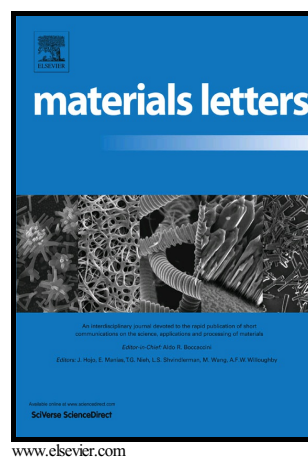


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Surface effect induced Cu-Cu bonding by Cu nanosolder paste

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Surface effect induced Cu-Cu bonding by Cu nanosolder paste

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Abstract:

Based on surface effect of nanoparticles, excellent Cu-Cu bonding was achieved by sintering of Cu nanosolder paste. The surface melting behavior of nanoparticles and the bonding process was investigated at the temperature of 250 °C to 400 °C under the protection of Argon/Hydrogen gas mixtures. The antioxidative Cu nanoparticles were synthesized with high yield by an efficient method for the preparation of solder paste. The bonding achieved by thermo-compression shows great tolerance to experimental environment and the roughness of bonding substrates. The largest shear strength in this study could exceed 35 MPa, which is suitable for high-density packaging of three-dimensional integrated circuits.

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