

Inlay Clad Metal for High Temperature Connector Applications

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Recent development in new designs for automotive electronics and telecom applications will require more reliable connectors at higher temperatures and /or adverse environments. The essential requirements for the connector materials in such low voltage applications include stable low surface contact electrical resistivity, sound corrosion resistance in the service conditions as well as high wear resistance if sliding contact is involved.

An ultra-thin layer AuPdAgNi diffusion-alloyed inlay clad metal system has been developed and is being studied. Contact electrical resistivity was evaluated experimentally on the AuPdAgNi inlay materials after exposure in air at various temperatures above 150°C as well as in humidity with a cyclic temperature up to 150°C. Selective Au-electroplating metal samples were included in the evaluation for comparisons. The two metal systems showed different behaviors in contact electrical resistivity along the exposure time, with the AuPdAgNi inlay system being more stable. Characterizations of the exposure surfaces were performed for analysis.