

Abstract Submitted  
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**The Electrical Contact for Higher Manganese Silicide Thermoelectric Material**<sup>1</sup> XINGHUA SHI, ZAHRA ZAMANIPOUR, DARYOOSH VASHAEE, Oklahoma State University — The Electrical Contact for Higher Manganese Silicide Thermoelectric Material Xinghua Shi, Zahra Zamanipour, Daryoosh Vashae Several electrical contact materials for Higher Manganese Silicide (HMS) are introduced. HMS is useful thermoelectric material for medium to high temperature applications. We have investigated several materials including Co, Ni, Cr, Ti, Mo, MnSi, MoSi<sub>2</sub>, and TiSi<sub>2</sub> in search of the best contact material to HMS. The low electrical resistivity and reliability of the contact are two important elements to make a high efficient TE device. Moreover, the contact must maintain its chemical, mechanical, thermal, and electrical properties over a broad range of temperature (20C-700C). The investigated elemental metals failed to make reliable contact in terms of mechanical and chemical stability at high temperature. In contrast, the investigated metal silicides showed superior stability over extended operation at high temperature. The thermal stability and strong mechanical bonding of TiSi<sub>2</sub> C54 phase and MnSi were specially observed. Their ohmic contact resistance was also within the range of interest over the whole range of temperature ( $10^{-5}$ - $10^{-4}\Omega\text{cm}^2$ ).

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