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Long Term Thermal Stability of ZrB₂/SiC and Ni/SiC Schottky Contacts¹ SARA SCHAEFER, TOM ODER, Youngstown State University — Wide band gap semiconductors such as silicon carbide (SiC), group III-nitrides and zinc oxide (ZnO) have properties that make them excellent for fabricating electronic devices for high temperature applications. A key component in many of these devices is the Schottky metal contact, which should remain stable in the high temperature environment. We have fabricated SiC Schottky diodes using zirconium boride (ZrB₂) and nickel as the Schottky contacts. These diodes were subjected to long term thermal stressing at 500 °C for several hours. The electrical properties of the diodes were characterized by determining the Schottky barrier heights and the ideality factor from the current-voltage measurements. The barrier height value of 1.58 eV was obtained for the diodes with ZrB₂, and this remained roughly unchanged after stressing at 500 °C for 20 hours. The ideality factor however varied from 1.1 to 1.6. Our results so far indicate that the diodes made with ZrB₂ contacts have better stability when compared to those made with Ni contacts.

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