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Protective SiAlON Coating with Embedded High Temperature Corrosion Sensor S.B. RIVERS, Rhode Island College, J.I. KRASSIKOFF, G. BERNHARDT, C.J. BOCCHINO, R.J. LAD, University of Maine — We have fabricated oxidation resistant and wear resistant SiAlON films by RF magnetron co-sputtering of Al and Si targets in Ar/O₂/N₂ mixtures. The SiAlON films are amorphous, extremely smooth, and have very low oxygen permeability making them extremely attractive as passivation layers on a variety of sensors and other micro-electronic devices used in high-temperature oxidizing environments. To analyze the performance of these films as passivation coatings, we incorporated a corrosion sensor at the SiAlON-substrate interface to monitor oxygen penetration through the coating. This corrosion sensor is a serpentine metal pattern. The conductivity changes as a function of time are monitored giving an *in situ* quantitative measure of the oxidation rate of the metal sensor due to oxygen diffusion through the SiAlON film.

Steven Rivers
Rhode Island College

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