

LONG TERM EVALUATION OF GLASS COMPOSITES FOR USE AS RELIABLE  
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There exists a need to develop dependable and consistent seals for joining solid oxide fuel cells (SOFC's). A good sealing material must exhibit both hermeticity and good adherence at SOFC operating temperatures, as well as relieve thermal expansion mismatch stresses, either by creep of an integrated ductile metal or high viscosity glass. The compositions, amounts and microstructures of the different phases control composite properties such as glass transition temperature and thermal expansion coefficient. Promising SOFC joining materials have been developed and their stability at the proposed operating temperature (750 °C) in both air and moisture saturated H<sub>2</sub> (g) have been analyzed. Additionally, a consistent method for manufacturing uniform seals was also addressed and studied by using a tape casting method to process the glass composite seals reliably. The strength of seals made with tape cast composites were measured using a room temperature leak testing apparatus.

*Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the U.S. Dept. of Energy under Contract DE-AC04-94AL85000.*

18<sup>th</sup> Annual Rio Grande Symposium on Advanced Materials  
Tuesday, October 10, 2006  
Embassy Suites Albuquerque  
Albuquerque, New Mexico