**Low Cost Aluminide Based Coatings for the High Temperature Protection**

**of Metallic Components in SOFC Systems**

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For solid oxide fuel cells (SOFCs), the key barrier to technology commercialization is the high system cost, which is driven by materials selection. The U.S. DOE cost goal of $700/kW for SOFC power generation systems requires the selection of common grade stainless steel wherever possible. However, without protective coatings, the air-facing surfaces of steel components oxidize and volatize chromium species that poison the stack. Similarly, air/exhaust heat exchangers must be designed to prevent chromium volatilization; on the fuel side, oxidation (due to high steam content gas streams), carburization and coking are all catastrophic failure mechanisms for metals facing high carbon fuel streams.

NexTech has demonstrated that low cost, aluminide based coatings are available that meet the needs of SOFC developers as well as the broader power generation market. Fidelity of the coating has been demonstrated for commercially important balance of plant alloys and significant improvement in high temperature corrosion (oxidation/coking) resistance established. Examples of how the coating process has been successfully scaled from small planar coupons to uniformly coating interior and exterior surfaces of large components with complex geometries will be presented.