

Perovskite Adsorbents for Warm-Gas Arsenic and Phosphorus Removal
Eltron Research & Development
Erick J. Schutte, David A. Gribble, Sara L. Rolfe
eschutte@eltronresearch.com ; 303-530-0263 ext. 125

Poster will contain three primary sections. The first will be a brief introduction of the issues posed by arsenic and phosphorus in relation to solid oxide fuel cells (SOFCs) which include the formation of solid phase nickel arsenides and nickel phosphides when contact is made with the nickel catalyst. These compounds are very stable and lead to structural rearrangements, diffusion of poisons to interface, and loss of electrical percolation within the anode support.

The second section will be an overview of the development of Eltron's adsorbent in the Phase I which was focused on perovskite and other ceramic materials containing elements known to form very strong bonds with both arsenic and phosphorus. The compounds formed are extremely stable at high temperatures and in steam laden environments. A general summary of the testing results will also be presented in this section.

The final section will contain a description of Eltron's Phase II plan and the various improvements in both synthesis and testing that we plan on employing based on the knowledge gained in the Phase I, including a novel testing method for arsenic and phosphorus which is expected to yield quantifiable results below 20 ppb concentrations.