

**Thursday, March 22, 2012**  
**FISSION POWER SYSTEMS: HEAT TRANSFER AND THERMAL CONTROL**  
**3:30 p.m. Waterway Ballroom 1**

**Chairs:**     **Marc Gibson** (NASA Glenn Research Center)  
              **Omar Mireles** (NASA Marshall Space Flight Center)

- 3:30 p.m.     Gu H. \* Shouzhi Z. Zhiyong S. Gang C. Chengzhi Y. Yunpeng S. Hong Y.  
                  [\*A Heat Pipe Cooled Modular Reactor Concept for Manned Lunar Base Application\*](#) [#3015]  
                  A lithium heat pipe cooled modular fast reactor (HPCMR) power system concept has been developed for manned lunar base application. The system is designed to use the static thermoelectric conversion module to produce over 100 kW electricity for up to ten years.
- 3:50 p.m.     Geng S. M. \* Niedra J. M. Polzin K. A.  
                  [\*Magnetic Analysis of an Annular Linear Induction Pump for Fission Power Systems\*](#) [#3033]  
                  A 3-D magnetostatic model was created of a prototypic annular linear induction pump (ALIP) for fission power systems. This paper presents the model along with performance predictions generated at various ALIP operating conditions.
- 4:10 p.m.     Flanders J. M. \* Eades M. J. Blue T. E. Sun X.  
                  [\*Heat Exchanger Considerations for a Space Molten Salt Reactor\*](#) [#3075]  
                  Research at the Ohio State University has identified molten salt reactors as a potentially appealing technology for high-power, high-temperature space fission systems. The design aspect of the heat exchangers for a Brayton cycle is discussed.
- 4:30 p.m.     Jaworske D. A. \* Gibson M. A. Hervol D. S.  
                  [\*Heat Rejection from a Variable Conductance Heat Pipe Radiator Panel\*](#) [#3016]  
                  A titanium-water heat pipe radiator panel was evaluated in vacuum. Variable conductance heat pipes were sandwiched between two polymer matrix composite face sheets. Heat rejection was calculated utilizing the Stefan-Boltzmann equation.
- 4:50 p.m.     Briggs M. H. \*  
                  [\*Conceptual Design of an Affordable Radiator for the Fission Power System Technology Demonstration Unit\*](#) [#3031]  
                  Results of a trade study on affordable radiator designs for the Fission Power System (FPS) Technology Demonstration Unit (TDU).