

# Sketching Out the Nuclear Future

Session Five

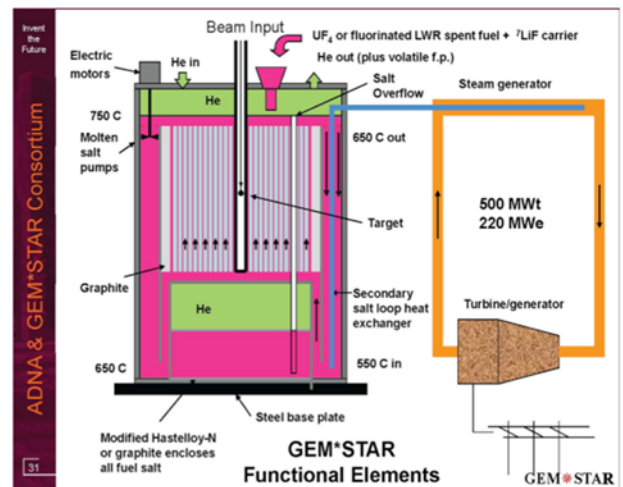
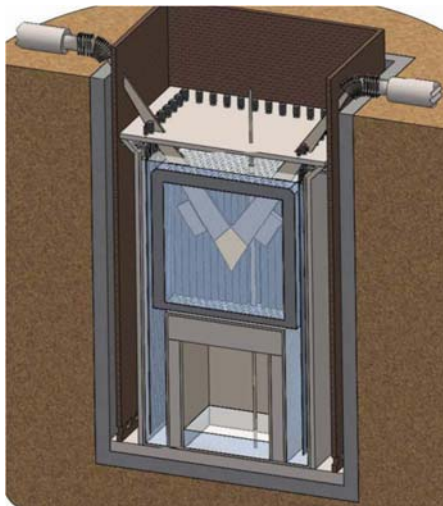
## GEM\*STAR, an Accelerator-driven Subcritical Reactor

March 22, Noon-1PM, Clean Air C

Professor Alireza Haghighat, director of the Nuclear Science and Engineering Lab at Virginia Tech Research Center, will describe GEM\*STAR, Green Energy-Multiplier Safe Technology for Alternative Reactors. The design uses a molten salt fuel, with graphite moderation, in a subcritical configuration. The supplemental neutrons needed to sustain the reaction are provided by accelerator.

This concept was developed by Professor R. Bruce Vogelaar of Virginia Tech and Dr. Charles Bowman from ADNA Corporation (Accelerator Driven Neutron Applications). Dr. Haghighat (pronounced HA-gee-gat) will explain how this novel design addresses key challenges including waste, fuel enrichment, reprocessing, safety and cost. He will discuss the performance of the reactor for burning uranium or nuclear waste or converting weapons-grade plutonium. An equilibrium cycle can be achieved in approximately two years.

GEM\*STAR can significantly contribute to the generation of safe, clean, secure nuclear power that is economical with significantly less nuclear waste and no need for enrichment.



Dr. Haghighat is former (2001-2009) Chair of the University of Florida (UF) Nuclear & Radiological Engineering (NRE) Department and former (2008-2010) Director of UF Training Reactor. Prior to Florida, Prof. Haghighat was a faculty member at the Pennsylvania State University for 15 years. He is a fellow of the American Nuclear Society. Over the past 29 years, Prof. Haghighat has been involved in the development of new particle transport methodologies and large computer codes for modeling and simulation of nuclear systems including reactors, nuclear security and safeguards systems and medical devices.