

RFA-18-15820, Electroanalytical Sensors for Liquid Fueled Fluoride Molten Salt Reactor

ThorCon is developing a thermal thorium/uranium molten salt fueled reactor (known as the ThorConIsle power plant). Onsite fuel processing is limited to adding makeup fuel and beryllium to maintain redox balance in the fuel salt. The approach uses shipyard production to build a complete 500 MWe power plant and then tow it to a site where it is ballasted to the sea bottom.

In order to provide the full range of sensing requirements for the ThorConIsle power plant, two sensors will be needed. The first sensor is needed to perform high concentration measurements of species such as UF_3 and UF_4 . The second sensor is needed for low concentration measurements of the fission and corrosion products.

ThorCon has requested Argonne National Laboratory to assist in the development of multi-function sensors for redox control and safeguards in fuel salt. The proposed sensors will support successful deployment of the ThorConIsle demonstration power plant.