

Advanced Fuel Cycle Initiative Fuel Development Program Overview

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Future energy security depends upon the development of reliable, safe, and environmentally sensitive sources of energy production. It is imperative that future energy strategies take advantage of a variety of energy production methods. To this end, the Department of Energy is pursuing the development of sustainable nuclear energy production. The Generation IV program has the charter for the development of future (> 2020 AD) deployable and sustainable nuclear power plants. The Generation IV program is an international program utilizing the expertise and capabilities of the partnering nations on a variety of nuclear reactor concepts. In the United States, the Advanced Fuel Cycle Initiative (AFCI) is responsible for development and qualification of the reactor fuel forms that will be utilized for the Generation IV reactors. The Generation IV program is currently researching a variety of possible reactor concepts that include liquid and gas cooled fast reactors, super critical water reactors, thermal spectrum high temperature gas reactors, and fast spectrum molten salt reactors. As always, reactor designers would like to push the reactors to operate at as high a temperature as feasible to increase and maximize the energy conversion efficiency of the reactor plant.