Curium does not occur naturally in the Earth’s crust. It was first synthesized in 1944 by Glenn T. Seaborg and his team at the University of California in Berkeley using the reaction $^{239}\text{Pu} \left( ^4\text{He}, \text{n} \right) ^{242}\text{Cm}$. The element was named after Pierre and Marie Curie, who discovered radium and polonium.

4.96.1 Curium isotopes in industry

$^{244}\text{Cm}$ and $^{242}\text{Cm}$ (with half-lives of 18.1 years and 169 days, respectively) are strong alpha emitters (see alpha decay). The alpha emission from these isotopes creates a considerable quantity of heat that makes them useful as alpha particle sources, as well as heat generators in RTGs (radioisotopic thermoelectric generators) [72]. During a number of space missions in America and Europe, such as the Mars Exploration Rover and the Rosetta/Philae, $^{244}\text{Cm}$ was the source used for the alpha particle X-ray spectrometer that was on board [72, 615]. $^{244}\text{Cm}$ has a
large neutron capture to neutron fission cross-section ratio and has been used in a nuclear reactor to produce higher mass radio-isotopes of curium (Figure 4.96.1) [72, 615].

**Fig. 4.96.1**: Schematic drawing of the inside of a reactor core at the Oak Ridge National Laboratory’s High Flux Isotope Reactor facility. $^{244}\text{Cm}$ is used as the target in the flux trap. (Image Source: Oak Ridge National Laboratory) [616].