# How does HERL™ (High-Efficiency Radiolysis) compare with Nuclear Fission?
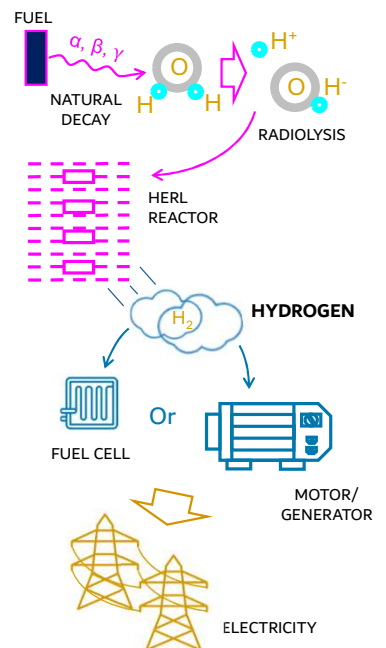
FISSION

- In Fission, fissile materials such as uranium are bombarded with neutrons which initiates a chain reaction of splitting the uranium into smaller radioactive elements, more neutrons, and heat.

- The heat comes from a portion of the original uranium's mass being converted to energy via the Einstein relationship $E=mc^2$.

- The chain reaction of producing more neutrons at each step is difficult to control and very difficult to turn off.

- Fission products can remain radioactive for hundreds of years.

- The heat from Fission is used to generate steam, which is then used to power an electric turbine, producing electricity.

- Fission is used by many companies.
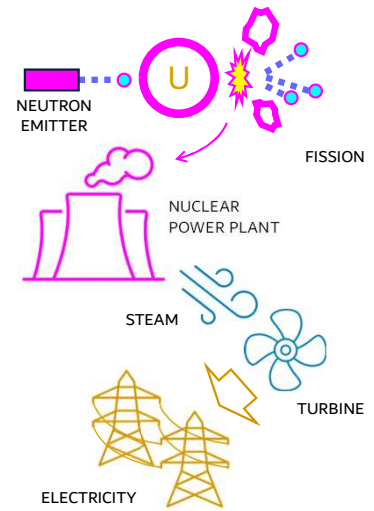
HERL™

- HERL uses proprietary technology to amplify the hydrogen generation capacity of the interaction of ionizing radiation with water.

- Ionizing radiation is provided by the radioactive decay of naturally occurring radioactive materials, man-made isotopes, or select Fission products extracted from high-level nuclear waste.

- Radioactive decay cannot be switched-off; however, an endpoint can be designed such that radioactive materials decay to stable (non-radioactive) end-products within a specific period, such as 10 years.

- Hydrogen generation can be turned-off at any time, simply by the flick of a switch.

- HERL systems do not produce excessive heat, unlike Fission.

- HERL produces **hydrogen**, which can be sold or fed into a fuel cell or hydrogen motor/generator to produce electricity.

- HERL is an early-stage technology exclusively owned by Herl Technologies.

SAFETY

- Both HERL and Fission require protective shielding.

- Depending on which type of nuclear fuel is used, shielding requirements for HERL can be much simpler than is needed for Fission.

- There is no need for complex heat management in HERL as there is for Fission, thus resulting in commercial systems that are less complex, more robust and potentially safer and easier to deploy.