

Title (en)  
FISSION-VOLTAIC REACTOR

Title (de)  
SPALTUNGSVOLTAISCHER REAKTOR

Title (fr)  
REACTEUR VOLTAIQUE A FISSION

Publication  
**EP 1350255 A2 20031008 (EN)**

Application  
**EP 01997817 A 20011119**

Priority  
• US 0144666 W 20011119  
• US 71638800 A 20001120

Abstract (en)  
[origin: WO0243076A2] A nuclear reactor including a core having nuclear fuel material, moderator material and a semiconductor device. The core by itself has a subcritical mass. The reactor also includes a fission inducing source which is movable from a first position outside the core to a second position inside the core, whereby the core becomes critical. Finally, the reactor includes a neutron reflector which surrounds the core and includes an opening to permit the insertion and removal of the fission inducing source. For, for instance, terrestrial applications the reactor would also include a shield surrounding the neutron reflector. Preferably, the core consists of concentric cylinders of the semiconductor device, the nuclear fuel material, and the semiconductor device, whereby the nuclear fuel material is sandwiched between layers of the semiconductor device. The nuclear fuel material is in the form of a thin foil or deposit which has a thickness in the range of 1.5 mg/cm<2> to 10 mg/cm<2>, which thickness depends on the particular type of fuel used. The semiconductor device includes a semiconductor material that has a high electrical collection efficiency and is able to survive both the high temperatures and high particle fluences generated by the nuclear fuel material. The semiconductor device is selected from the group including p-n junction diodes and Schottky barrier diodes.

IPC 1-7  
**G21C 1/30**; **G21D 7/00**; **G21H 1/06**

IPC 8 full level  
**G21D 7/00** (2006.01); **G21H 1/06** (2006.01)

CPC (source: EP)  
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