

# Ignition of thermonuclear fuels utilising the energy liberated in ${}^6\text{Li}(n, T){}^4\text{He}$ reactions

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## Abstract

${}^6\text{Li}(n, T){}^4\text{He}$  fusion reactions occur readily at room temperature and liberate 4.8 MeV per reaction. It is shown that this energy can be utilised to ignite thermonuclear fusion fuels. The main fuel considered is a mixture containing equal numbers of tritium and deuterium nuclei. Rate equations and their numerical solutions are presented. The solutions show that it is possible to ignite the D-T fuel with an initial charge containing equal numbers of  ${}^6\text{Li}$  nuclei and neutrons. A sketch of a probable fusion reactor which would utilise the proposed heating scheme is presented.

## Indexed keywords

**Engineering controlled terms:** Lithium Compounds; Nuclear Energy--Thermonuclear Reactions

**Engineering uncontrolled terms:** Fusion Fuel Heating; Fusion Fuel Ignition; Probable Fusion Reactor; Rate Equations; Thermonuclear Chain Reactions; Thermonuclear Fuels

**Engineering main heading:** Nuclear Fuels