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Electron Impact H-H and D-D Fusions in Molecules Embedded in Al I. Experimental Results

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Abstract:

Both H-H and D-D fusion reactions, detected via high energy particle emission on CR-39, are shown to occur when 200 and 400 keV electrons are bombarded onto H⁺ or D⁺ ion implanted Al thin crystals. Roughly $1-2 \times 10^3$ particle emissions, including both hydrogen and helium isotopes, in whole space were observed in each case. Collisions between recoiled D atoms due to the high energy electron impact give only 10^{-12} to 10^{-26} times smaller fusion rates than the experimental results. The present observations suggest the presence of a new kind of fusion reaction which occurs with negligible kinetic energy of the reacting nuclei.

Keywords:

fusion, molecular fusion, hydrogen in Al, deuterium in Al, tunnel structure, electron bombardment, β -disintegration