Nuclear Experiment

Fusion of ^{6}Li with ^{159}Tb} at near barrier energies

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Complete and incomplete fusion cross sections for ^{6}Li+^{159}Tb have been measured at energies around the Coulomb barrier by the γ-ray method. The measurements show that the complete fusion cross sections at above-barrier energies are suppressed by $\sim$34% compared to the coupled channels calculations. A comparison of the complete fusion cross sections at above-barrier energies with the existing data of ^{11,10}B+^{159}Tb and ^{7}Li+^{159}Tb shows that the extent of suppression is correlated with the α-separation energies of the projectiles. It has been argued that the Dy isotopes produced in the reaction ^{6}Li+^{159}Tb, at below-barrier energies are primarily due to the d-transfer to unbound states of ^{159}Tb, while both transfer and incomplete fusion processes contribute at above-barrier energies.

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