

Decay dynamics of $^{221}\text{Ac}^*$ formed in $^{16}\text{O}+^{205}\text{Tl}$ reaction at above barrier energies

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The study of heavy ion induced reactions provides an opportunity to extract the knowledge of nuclear dynamics and related structural effects of nuclear systems belonging to different regimes of isotopic chart. Significant theoretical and experimental work have been done to understand the dynamical processes associated with variety of nuclear reactions, but still there is an enigma among the investigators due to complex nuclear properties and associated aspects. In view of this, the present work aims to analyse the decay of $^{221}\text{Ac}^*$ nucleus formed in $^{16}\text{O}+^{205}\text{Tl}$ reaction at $E_{c.m.}=76.2-104.5$ MeV. In reference to the experimental finding of Gehlot et al. [1], the evaporation residue (ER) cross sections are calculated using Dynamical Cluster decay Model (DCM) [2,3]. The corresponding decay properties are investigated by analysing the fragmentation potential and preformation probability of decaying fragments. Note that, the calculations are performed using quadrupole(β_2) deformations of decay fragments with optimum orientations (θ_{iopt}). We intent to present comprehensive analysis of decay dynamics associated with the chosen reaction at time of conference.

[1] J. Gehlot, A.M. V. Kumar et al.// Phys. Rev. C. 2019. V. 99.I.034615.

[2] A. Kaur, M. K. Sharma//Phys. Rev. C. 2019. V. 99.I.044611

[3] N. Grover, K. Sandhu, M. K. Sharma//Nucl. Phys. A. 2018.V.974.P.56.

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