

## PROBING FISSION FRAGMENTS OF 182, 183Hg NUCLEI AT ENERGIES AROUND COULOMB BARRIER

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Asymmetric fission of mercury nuclei was initially observed in low energy region [1-3]. Sub-lead region is the region where it is noticed that the fission fragment shell property is over-ruled by the ridges and valleys present from saddle to scission point in the potential energy surface. These ridges and valleys are the result of shell correction, which vanishes with increase in excitation energy. In recent years several experiments have been performed in this direction to investigate the asymmetric behaviour of Hg nuclei which supported the influence of shell effects on the asymmetric fission process [4-6].

Spherical shells are more stable towards asymmetric fission in comparison to deformed nuclei. It has been observed that the three odd nuclei 181,183,185Hg have highly deformed charged radii in comparison to other mercury isotopes, due to quadrupole and monopole moment [7]. Thus, one may expect for 183Hg to show more asymmetry in fission fragments mass-energy distribution in comparison to 182Hg.

An experiment is performed using CORSET [8] setup, where we investigate mass and energy distributions of fragments and fission characteristics of oblatelly deformed 182 Hg ( $\beta_2 = 0.147$ ) and prolate deformed 183Hg ( $\beta_2 = 0.313$ ) nuclei formed by  $^{40}\text{Ca}+^{142,143}\text{Nd}$ , at three different lab energies  $E_{\text{lab}} = 172, 192, 212$  MeV. Observing their  $\beta_2$  value we understand that 182Hg is lightly deformed in comparison to 183Hg. The energies taken into consideration are at different difference from the Coulomb barrier, so that we can study the behaviour in different regions. We are expected to get higher asymmetry for 183Hg but we find a contradicting result where there is no huge variation in mass-energy distribution of 182Hg and 183Hg at any of the measured energies. This gives us an outlook regarding influence of shell structure, charge radii deformation and factors associated in the potential energy surface that are responsible for fission in Hg region.

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