

STUDY ON CORRELATION BETWEEN LIGHT PARTICLES AND FRAGMENTS IN 25MeV/u $^{40}\text{Ar} + ^{115}\text{In}$ REACTION

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Light charged particles have been intensively studied in the intermediate-energy region during the past years. Study on light charged particles emission may provide some information on the nature of the

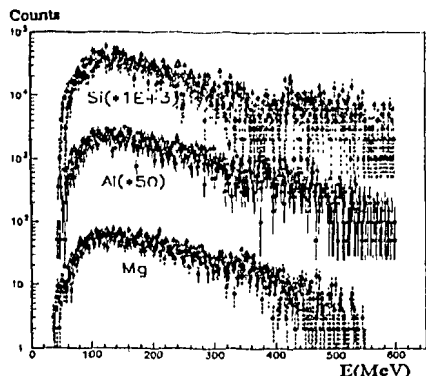


Fig.1. The energy spectra of the fragments observed at $\theta = 17.5^\circ$ coincident with LCP

fragments observed. All of these spectra have a lower-energy peak and a higher energy tail. The lower part of the spectra may be emitted from an equilibrium system and the higher tail from more direct process. From the energy spectra of LCP, we found a left-right asymmetry of the light particles in coincidence with PL-fragments, and this asymmetry decreases with the increasing detected angle. Fig.2 presented a yields ratio of various particle coincident with opposite and same side fragments versus the fragment Z. For the higher part of the energy spectra of the LCP, the ratio increases with the increasing fragment Z, especially for the composite particle. This may indicate that the LCP emitted from reaction zone would be reabsorptive by the spectator of the projectile, depend on size of the reaction zone and the participant particles during the reaction and this effect pay a important role for composite particles than for proton. But for the lower energy part, which emitted from equilibrium system, the ratio remain a same value with the increase fragment Z. This asymmetry may be the result of the recoil effect of particles from the fragments.

Reference:

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 [2] R. J. Charity et. al. Nucl. Phys. A483(1988)371

hot nuclei. In the coincident measurement with projectile-like-fragment, there is a strong left-right asymmetry observed. The correlation between the fragments and light charged particles was investigated in the 25MeV/u $^{40}\text{Ar} + ^{115}\text{In}$ reaction. This experiment was performed at the Heavy Ion Research Facility in Lanzhou(HIRFL), using ^{40}Ar projectile bombard on a ^{115}In target of $2.05\text{mg}/\text{cm}^2$. The fragments were detected at $\pm 17.5^\circ$ by two same telescopes. All elements up to Ar were clearly identified and these telescopes have lower energy thresholds. The light charged particles were measured at $+25^\circ, +35^\circ, +55^\circ, +75^\circ, +95^\circ, -115^\circ, -135^\circ, -155^\circ$. Fig.1 shows the typical energy spectra of some

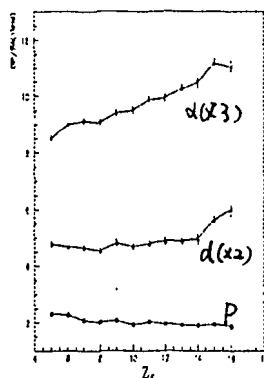


Fig.2. Yield ratios of light particles at $\theta = 55^\circ$. Energy spectra are summed over $E > 20, 25, 30$ MeV for p, d and α -particle.