

N/Z influence on disintegration modes of compound nuclei.

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The study of nuclei under extreme conditions (temperature, spin, neutron-to proton ratio N/Z) drives a major part of modern experimental and theoretical works. The fusion mechanism between heavy ions colliding at bombarding energy around the coulomb barrier is well adapted to form a hot and rotating nuclei in a controlled way on excitation energy E_{ex} and angular momentum J . Excited compound nuclei decay via a variety of channels. In this regime, emission of neutrons and light charged particles are the dominant channels and fission mechanism is mainly associated to the highest angular momentum transferred into the compound nuclei. Since few decades it has been recognized that intermediate mass fragment (IMF) with charge $Z \geq 3$ are produced with noticeable cross section and fill up the mass domain of emitted products, between extreme mass asymmetry, the neutron and fission ones. Besides thermal and rotational energy, the neutron to proton ratio (N/Z) of the compound nuclei is expected to play a role in the disintegration mode. With the advent of future radioactive facilities it becomes pertinent to explore the influence of this new degree of freedom on decay channels of compound nucleus. In this contribution we present new data on the production of fragments with $6 \leq Z \leq 28$ formed in $^{78}\text{Kr} + ^{40}\text{Ca}$ and $^{82}\text{Kr} + ^{40}\text{Ca}$ reactions at 5.5 MeV/A of bombarding energy. The experiment has been performed at the GANIL facility and light charged particles and fragment have been measured with the highly efficient 4π INDRA array. The shape of the kinetic energy spectra, the independence of the average kinetic energy as a function of the emission angle in c.o.m and the shape of angular distributions are compatible with an emission from a compound nuclei formed in complete fusion process. Cross sections have been extracted by means of normalization to the elastic scattering. Striking facts are an even-odd staggering of the yields superimposed on a bell shape distribution of symmetric fission. The staggering effect is more pronounced for the neutron poor system. Data are discussed in comparison with predictions of transition state model (GEMINI code) and Hauser-Feshbach model (BUSCO code).