

## Recent results in the mass 200-240 region from SASSYER and STARS

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Direct measurements of neutron induced reactions on unstable nuclei pose significant experimental challenges, for example, the half life of  $^{237}\text{U}$  is one week making the direct measurement extremely difficult. The surrogate ratio technique can be utilized to overcome the problems inherent in the direct measurement. Here, the same compound systems are produced using stable beams and targets. Using the STARS detector array, coupled to the YRAST Ball array at Yale or the Liberace clover Ge detector array at Lawrence Berkeley National Laboratory the ratios of cross sections,  $^{236}\text{U}(\text{d,pf})/^{238}\text{U}(\text{d,pf})$ , surrogate for  $^{236}\text{U}(\text{n,f})/^{238}\text{U}(\text{n,f})$  and  $^{236}\text{U}(\text{d,d'f})/^{238}\text{U}(\text{d,d'f})$ , surrogate for  $^{235}\text{U}(\text{n,f})/^{237}\text{U}(\text{n,f})$  have been measured. The first ratio, benchmarks the technique, since the reactions on both  $^{236}\text{U}$  and  $^{238}\text{U}$  are well know. Since  $^{235}\text{U}$  is also well studied, the cross section for  $^{237}\text{U}(\text{n,f})$  can be extracted from the second ratio for range of neutron energies up to  $\sim 14$  MeV. These and other recent results using the surrogate and surrogate ratio technique will be presented and the applicability of the technique to this and other mass regions discussed.

Recent results on the high-spin structure of light actinide nuclei lying to the 'north-west' of 208Pb will also be presented. The combination of the YRAST Ball Ge detector array and the SASSYER gas filled magnetic separator was utilized to suppress the very large fraction of fission events and to enable these measurements. If time allows some very recent results on conversion coefficient measurements of the TSD Bands (including the wobbling band0 in  $^{167}\text{Lu}$  will be presented. This work is supported in part by the DOE NNSA under grant number DE-FG52-06NA26206.