Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Neutron flux characterization of californium-252 Neutron Research Facility at the University of Texas - Pan American by nuclear analytical technique KAREEM WAHID, PATRICK SANCHEZ, MOHAMMAD HANNAN, University of Texas Pan American — In the field of nuclear science, neutron flux is an intrinsic property of nuclear reaction facilities that is the basis for experimental irradiation calculations and analysis. In the Rio Grande Valley (Texas), the UTPA Neutron Research Facility (NRF) is currently the only neutron facility available for experimental research purposes. The facility is comprised of a 20-microgram californium-252 neutron source surrounded by a shielding cascade containing different irradiation cavities. Thermal and fast neutron flux values for the UTPA NRF have yet to be fully investigated and may be of particular interest to biomedical studies in low neutron dose applications. Though a variety of techniques exist for the characterization of neutron flux, neutron activation analysis (NAA) of metal and nonmetal foils is a commonly utilized experimental method because of its detection sensitivity and availability. The aim of our current investigation is to employ foil activation in the determination of neutron flux values for the UTPA NSRF for further research purposes. Neutron spectrum unfolding of the acquired experimental data via specialized software and subsequent comparison for consistency with computational models lends confidence to the results.

Kareem Wahid
University of Texas Pan American

Date submitted: 14 Nov 2013 Electronic form version 1.4