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Title: AN AM-241-BE SOURCE BASED THERMAL-NEUTRON ACTIVATION-ANALYSIS FACILITY AT KFUPM

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Abstract: An instrumental thermal neutron activation analysis facility based, on a 16 Ci Am-241-Be source, a high resolution gamma-ray spectrometry setup and a PC-based data acquisition system at KFUPM is described. The thermal neutron flux distribution was determined from the induced activities of high purity indium foils. The absolute thermal neutron flux was calculated from the activities of bare and cadmium-covered gold foils at a position of 3 cm from the source at which the flux reaches a maximum. The facility tests were carried out with the determination of manganese concentrations in six types of industrially important steel samples. The result of 1.33% manganese in SS-304 steel sample was in excellent agreement with the literature value. The method is nondestructive, economical and ideal for bulk analysis.