

## C017243 : MAJOR NUCLEAR TECHNOLOGY

KEY WORD : BINARY ALLOYS/BETA RAYS/BETA BACKSCATTER

DAVICH BANTHAO : DETERMINATION OF SOME BINARY ALLOY COMPOSITIONS  
USING BETA BACKSCATTERING TECHNIQUE. THESIS ADVISOR : ASST. PROF.  
NARES CHANKOW, M. Eng. 81 pp. ISBN-974-581-778-3

The purpose of this research was to investigate the use of beta backscattering technique for determining elemental composition of binary alloys. A high energy beta source, Sr-90/Y-90, was selected to be used in this research so as to obtain high percentage of beta backscattered intensity and to minimize the uncertainty due to sample surface roughness. It was found that the sample thickness from about  $250 \text{ mg/cm}^2$  would give the saturation backscattered intensity. The technique was tested with lead-tin alloy samples from factories and it was found that the beta backscattered intensity increased with increasing lead content in the sample. It was also found that the sensitivity can be improved significantly by placing an aluminum filter in front of the GM tube. Lead contents in 22 lead-tin alloy samples obtained from this technique were in good agreement with those obtained from the XRF, the atomic absorption and the specific gravity methods. The precision of this technique were found to be about  $\pm 0.5\%$  while the accuracy depended upon the standards used for calibration and the homogeneity of the samples.