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KEY WORD: XENOTIME / EXTRACTION PROCESS / URANIUM / THORIUM

DUANGPORN THANOMNGAM : EXTRACTION OF URANIUM AND THORIUM FROM
XENOTIME. THESIS ADVISOR : ASST. PROF. CHYAGRIT SIRI-UPATHUM,
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The objective of this research was to study the extraction of uranium and thorium in local Xenotime by digestion with sodium hydroxide solution. The composition of Xenotime was analyzed qualitatively and quantitatively by x-ray fluorescence with Co-57 and Cd-109 as the excitation sources. The major component of the ore sample was Yttrium, 32.49%. The content of uranium and thorium in the ore sample were found to be 1.04 and 0.68 respectively. For the digestion, the effect of temperature, alkali-to-mineral ratio and heating time were investigated. A leaching yield of about 91.35% and 86.23% were obtained from sample with alkali-to-mineral ratio of 1 : 2 at 200 C and 3 hours leaching time for uranium and thorium respectively.

Uranium purification was made by ion-exchange method with Amberlite IRA-400 resin then precipitated by ammonia solution. The content of uranium in precipitation was found to be 62.08%. Solvent extraction with tributylephosphate in kerosine 40% for thorium purification was done. The content of thorium in thorium nitrate form was found to be 92.36%.

ภาควิชา..... วิศวกรรมเทคโนโลยี
สาขาวิชา..... วิศวกรรมเทคโนโลยี
ปีการศึกษา..... 2539

ลายมือชื่อนิสิต..... ดุรงค์ งามงาม
ลายมือชื่ออาจารย์ที่ปรึกษา..... ดุรงค์ งามงาม
ลายมือชื่ออาจารย์ที่ปรึกษาร่วม.....