was used as a tracer. The comparison was made between porous cation resin (home made) and Zerolit 225 cation resin, and the experimental results are given in Fig. 1. The results obtained show that the porous resin has better properties than Zerolit 225 resin in the separation of rare earth impurities from matrix yttrium.

The main spearation parameters are as follows: column length: 2 × 50 cm; resin size: ~200 mesh; concentration of the eluent (α-HIBA): 0.15 *M* (pH 5.4) for Y, 0.5 *M* (pH 5.4) for La, Ce, Pr, Nd, Sm, Eu.

Under these conditions the rare earth impurities (La–Eu) can be completly separated from matrix yttrium, the matrix residue amount is less than 100 μg for 1 g of Y_2O_3 on the column. Typical results are shown in Fig. 2.

Spectroscopic Determination. The solution dry-residue method with high absolute sensitivity was adopted to analyze the concentrate of rare earths. The detailed studies on carrier influence, matrix effect, and controlled atmosphere ratio (Ar: O_2) were made in this paper, and the adequate conclusions are given below:

(1) The addition of alkali elements increases the line intensities of rare earths, the increasing order is Cs > Rb > K > Na;

(2) The line intensities of La, Ce, Pr, Nd, Sm and Eu are rising with the concentration of CsCl, the optimal concentration range of CsCl in solution dry-residue method is from 5 to 20 mg/ml. If its concentration is higher than 20 mg/ml, the increase of the background and the decrease of the line intensities of rare earths will be observed (Fig. 3).

(3) The influence of matrix yttrium and third elements in concentrate should be considered. The experimental results show that the permissive maximum amounts of Y_2O_3 and CaO are 6 mg/ml and 5 mg/ml respectively.

(4) Controlled atmosphere ratio of 4:1 (Ar:O_2) was employed, and the gas-chamber used is shown in Fig. 4.

Sample Analysis. Analytical results for La, Ce, Pr, Nd, Sm and Eu in high-purity Y_2O_3 are listed in Table I.

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E33

Accumulation of Transplutonium Elements in Accelerators

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Uranyl Doped Glasses for Solar Concentrators

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Solar concentrators containing uranyl are presented. Various types of glasses were investigated: silicate, borate and fluorinated glasses.

The electronic and fluorescence spectra were recorded, the life-time of the excited state and some quantum yields have been measured.

The variations of the quantum yield can be related with uranium–uranium interactions. Consequently the best concentration of the uranyl depending upon the nature of the glass was evaluated.

Thus it is possible to build solar concentrators with adaptated parameters.

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Cyclotron Production of Gamma-Emitting Actinides, as Tracers for Metabolic and Waste Disposal Studies

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The employ of short-lived radionuclides as tracers for metallobiochemical studies in laboratory animals is well known and widely investigated [1]. Furthermore high-specific-activity 'neutron-deficient' radionuclides produced by light charged particle activation in low energy cyclotrons, are suitable tracers for more general investigations in the following fields:

1. Nuclear medicine (as radiodiagnostics)
2. Inorganic and organic chemistry