

研究简报

# $^{90}\text{Y}$ 电沉积的实验研究

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**摘要** 研究了用电沉积方法从 $^{90}\text{Sr}$ 母液中分离医用 $^{90}\text{Y}$ 的工艺条件。以0.1 mol/L pH 2.5的 $(\text{NH}_4)_2\text{SO}_4$ 溶液为电沉积底液,以铂为阳极,铂或不锈钢为阴极,控制阴极电流密度 $0.5\text{A}/\text{cm}^2$ ,电沉积50min, $^{90}\text{Y}$ 在阴极沉积率大于95%。阴极上的 $^{90}\text{Y}$ 用0.1~0.5mol/L的热硝酸洗脱后再次电沉积。二次电沉积后 $^{90}\text{Y}/\text{Sr}^{90}$ 的分离系数大于 $8 \times 10^5$ ,洗脱收率大于70%。铂丝阴极上的 $^{90}\text{Y}$ 可用200~400 $\mu\text{L}$  0.1~0.5mol/L的热硝酸洗脱,制成用于标记药物的 $^{90}\text{Y}$ 溶液;沉积有 $^{90}\text{Y}$ 的不锈钢阴极经热处理后,制成心血管放射性支架或医用敷贴片,其 $^{90}\text{Y}$ 的日浸出率分别小于1%和0.1%。残液中的 $^{90}\text{Sr}$ 经放置一段时间(20天)后,可用来再次分离 $^{90}\text{Y}$ 。

**关键词** [电沉积](#)  [\$^{90}\text{Y}\$](#)   [\$^{90}\text{Sr}\$](#)  [分离系数](#)

分类号

## Milking Medical $^{90}\text{Y}$ From $^{90}\text{Sr}$ solution By Electrodeposition

**Abstract** The technique of milking medical  $^{90}\text{Y}$  from  $^{90}\text{Sr}$  solution by electrodeposition is studied. using 0.1 mol/L pH 2.5  $(\text{NH}_4)_2\text{SO}_4$  as electrodeposition solution, platinum as anode, and platinum or stainless steel as cathode, the current density of cathode is controlled at  $0.5\text{A}/\text{cm}^2$ . After electrodeposition for 50 minutes, more than 95%  $^{90}\text{Y}$  can be deposited quantitatively on the cathode. Though two-step electrodeposition, the  $^{90}\text{Y}/^{90}\text{Sr}$  separation coefficient and elution recovery of  $^{90}\text{Y}$  are more than  $8 \times 10^5$  and 70% respectively. The  $^{90}\text{Y}$  deposited on platinum cathode can be eluted by 200~400 $\mu\text{L}$  of 0.1~0.5mol/L hot  $\text{HNO}_3$ , which is used to label monoclonal antibodies and peptide-receptor. The stainless steel cathode with deposited  $^{90}\text{Y}$  can be prepared to radioactive stent or medical patch, the former is used for the prevention of vascular restenosis, the later for the therapy of inflammation, the daily leaching efficiency of which are less than 1% and 0.1% respectively.  $^{90}\text{Sr}$  remained in the deposition solution will generate new  $^{90}\text{Y}$ , so from which  $^{90}\text{Y}$  can be milked again

**Key words** [Electrodeposition](#)  [\$^{90}\text{Y}\$](#)   [\$^{90}\text{Sr}\$](#)  [Separation coefficient](#)

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