

研究简报

## 北山地下水中Am的形态分布计算

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**摘要** Am在水溶液中的形态分布复杂, 直接测量困难, 使用相关软件依据热力学常数推算核素的形态分布简单可行。EQ3NR是地球化学程序EQ3/6的组成部分之一, 主要用于计算核素的存在形态和矿物的饱和指数。使用该程序计算了北山地下水中Am存在形态的分布。计算结果表明, 地下水中Am主要以 $\text{AmCO}_3^+$ 形态存在, 其含量可达60%以上; pH<6时, pH值对Am形态分布影响较小, pH>6时, 其形态分布随着pH的增加急剧变化; 大气、低氧2种条件对Am存在形态变化影响不明显。由于计算软件数据库的限制, 可能使得计算结果产生偏差, 今后要进一步更新数据库, 完善数据。

关键词 [EQ3NR](#); [Am](#); [形态](#)

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## Calculation on the Distribution of Americium Species in Beishan Groundwater

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**Abstract** Americium has lots of species in aquatic solution. It is difficult to measure the distribution of americium species while they can be calculated by many geochemical software. EQ3NR is a part of EQ3/6 which is a powerful geochemical modeling code. It is used to calculate the species distribution of some nuclides and saturated indexes of minerals usually. The distribution of Am species in Beishan groundwater system was simulated by EQ3NR. The results of calculation show that the main species of Am are  $\text{AmCO}_3^+$ ,  $\text{AmSO}_4^+$ ,  $\text{Am}(\text{CO}_3)_2^-$ ,  $\text{Am}^{3+}$ ,  $\text{AmOH}^{2+}$ ,  $\text{AmF}^{2+}$

and  $\text{Am}(\text{SO}_4)_2^-$  etc.. The influence of pH value on species distribution of Am is not significant when the pH value of groundwater is between 4-6, while the influence of pH is strong when pH value is higher than 6. The aerobic and anoxic conditions have little influence on the americium speciation distribution. Because the edition of the database is older, there will be a little difference between the simulated results and real circumstance. The database should be mended.

**Key words** [EQ3NR](#) [Am](#) [species](#)

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