



马志邦, 郑绵平, 吴中海, 马妮娜. 不纯碳酸盐U-Th等时线定年及同位素分馏对年龄的影响[J]. 地质学报, 2010, 84(6): 1000-1006.

不纯碳酸盐U-Th等时线定年及同位素分馏对年龄的影响 [点此下载全文](#)

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基金项目:

DOI:

摘要点击次数: 170

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摘要:

应用U-系L/R等时线模式测定了用天然碎屑沉积物与已知年龄的纯CaCO₃按不同比例混合而成的不纯碳酸盐行: 其I研究碎屑沉积物化学前处理过程中U、Th同位素的萃取行为及其分馏效应。另一序列用不同浓度的溶剂X溶解, 确定稀酸淋滤碳酸盐的效率。各组分的²³⁸U、²³⁴U、²³⁰Th和²³²Th含量分析数据表明, 稀酸溶解碎屑沉积物提取出来, 不会发生U和Th同位素分馏现象。对于不纯碳酸盐样品, 所有数据点落在一条直线上, 良好的线性关系碳酸盐样品的等时线年龄与纯碳酸盐年龄一致表明实验技术是可信的。同时, 也证明对于碎屑含量较高的不纯碳酸盐是适应的。

关键词: [不纯碳酸盐](#) [等时线技术](#) [L/R模式](#) [U-Th定年](#)

U-Th isochron dating of impure carbonates and the possible effect of isotopic fractionation during leaching [Download Fulltext](#)

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Fund Project:

Abstract:

U-series isochron technique has been applied to determine the age of impure carbonates that contain detritus and a pure CaCO₃ with known age in different proportions. The experiment was designed to evaluate the extracting behaviour and fractionating effect of isotopes U and Th of detritus during leaching. A series of experiments were carried out to examine the effect of acid attacks on both the carbonate and the detritus fractions in different proportions when treated with hydrochloric acid of different concentrations. Both the leachates and the residue fractions were analysed for ²³⁸U, ²³⁴U, ²³⁰Th and ²³²Th concentrations, which indicated that the detritus dissolved by different proportions of acid was based on constant proportion, thus the isotopic fractionation would not occur. For all data points fell on the straight line, such good linear relationship between the isotopic ratios of U and Th in the residue fractions could reflect the meaning of true age. The L/R method was applied to the artificial impure carbonate samples, the resulting age is found in agreement with the age of the pure carbonate sample, which showed that the L/R method is suitable for the U/Th age determination of impure carbonates with a higher content of detritus. Therefore, for the U/Th age determination of impure carbonates with a higher content of detritus, the L/R method would be adaptable.

Keywords: [impure carbonates](#) [isochron technique](#) [L/R model](#) [U-Th datings](#)

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