

An automatic solid phase extraction instrument for separation isotope from nature matrix in geological samples

WANG TONG¹, XIANG MEI², SHI YAJING², XU JINYONG^{2*}

¹College of Materials and Chemistry & Chemical Engineering,
Chengdu University of Technology, Sichuan 610059,
China

² College of Earth Sciences, Chengdu University of
Technology, Sichuan 610059, China

(*correspondence: 529550631@QQ.com)

An automatic solid phase extraction instrument has been assembled and successfully tested for separation isotope from matrix in geological samples. The instrument has 60 independent channels. Each channel corresponds to a specific sample. Four samples can be processed simultaneously for each extraction cycle. A syringe-driven unit delivers eluents and controls flow rate of elution. A multi-position valve unit can switch between up to 8 eluents. Up to 3 discrete fractions can be collected for each sample. The assembly units in contact with the liquid medium are made of corrosion-resistant polymer materials such as PP, PTFE, PEEK, PCTFE, etc.

The instrument has been used for the solid phase extraction of anion and cationic type isotopes. The results show that Fe, Mo, Sr etc isotope of interest can be effectively separated and quantitatively recovered from their natural matrix. The instrument can process from 24 to 60 samples in 12 hours in unattended operation.