Automated sample preparation for boron isotopes: Removing an analytical barrier

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Boron isotopes (δ^{11}B) in planktic foraminifera are a proven proxy for past surface oceanic pH [1,2], which has provided valuable insights into past changes in the ocean carbonate system, and ultimately into past atmospheric pCO_2. Consequently, its application has significantly increased during the last decade, with a higher number of laboratories now regularly measuring boron isotopes. However, the analysis of δ^{11}B by multi-collector ICP-MS requires the separation of boron from the sample matrix, which has been traditionally performed by manual drip chromatography using *homemade* Teflon columns. This represents a laboratory bottleneck in terms of space, time, inter-laboratory consistency and the need for training. At the University of Southampton, we have established a protocol for boron separation from a variety of sample matrices using the prep*FAST*-MC, a new automated chromatography system developed by *Elemental Scientific Inc.* (Omaha, NE, USA). In this contribution we will evaluate the system's accuracy, reproducibility, recovery, blank and carry over using a range of standards with different matrices, and will compare them to those obtained via the traditional manual method.

[1] Sanyal *et al* (2001) *Paleoceanography* **16**, 515-519 [2] Foster (2008) *Earth Planet. Sc. Lett.* **271**, 254-266