

IMS 1280-HR: a versatile SIMS instrument for Geosciences

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SIMS (Secondary Ion Mass Spectrometry) is applied to a variety of applications in Geosciences, because it provides *in situ* measurement of elemental and isotopic composition in selected μm -size areas of the sample.

The CAMECA IMS 1280-HR large geometry SIMS offers outstanding capabilities for a wide range of geological applications, thanks to its very high transmission mass spectrometer combined to a versatile multicollection system. The IMS 1280-HR is also able to map the lateral distribution of major, minor, and trace elements.

Hundreds of scientific papers have been published covering major application fields in geo- and cosmochemistry, geochronology, environmental studies,...:

- stable isotope ratio measurements on different systems: H [1], Li [2], C [3-5], O [6-10], Mg [11], Si [12], S [13-14],...
- U-Pb dating in Zircon [10,15-18],
- trace element analyses [10, 19-20],

A review of recent analytical data obtained with the IMS 1280-HR on different domains will be presented.

[1] J.P. Greenwood *et al.* (2011) *Nature Geoscience* (in press). [2] T. Ushikubo *et al.* (2008) *EPSL* **272**: 666. [3] J.A. Craven *et al.* (2009) *Mineral Mag.* **73**: 193. [4] J.M. Ferry *et al.* (2010) *GCA* **74**, 6517. [5] A.A. Nemchin *et al.* (2008) *Nature* **454**, 92. [6] N.N. Hanson *et al.* (2010) *Rapid Commun. Mass Spectr.*, **24**: 2491. [7] A.I.S. Kemp *et al.* (2007) *Science* **315**, 980. [8] R. Kozdon *et al.* (2009) *Chem. Geology* **258**: 327. [9] T. Nakamura *et al.* (2008) *Science* **321**: 1664. [10] F. Z. Page *et al.* (2007) *GCA* **71**: 3887. [11] J. Villeneuve *et al.* (2009) *Science*, **325**, 985. [12] F. Robert, M. Chaussidon (2007) *Nature* **447**, E1-E2 [13] A. El Albani *et al.* (2010) *Nature* **466**, 100. [14] P. Philippot *et al.* (2007) *Science* **317**: 1534. [15] X.-H. Li *et al.* (2009) *Geochemistry, Geophysics, Geosystems* **10**, N. 4. [16] G. Srinivasan *et al.* (2007), *Science* **317**, 345. [17] A.A. Nemchin *et al.* (2008) *GCA*, **72**, 668. [18] D. Trail *et al.* (2007) *GCA* **71**, 4044. [19] T. M. Harrison *et al.* (2007), *EPSL* **261**, 9 [20] M. J. Whitehouse *et al.* (2003) *Contrib. Mineral. Petrology* **145**: 61.