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## Trace element partitioning in alkaline lamprophyres

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Mineral/matrix partition coefficients have been determined in camptonitic lamprophyres of the Spanish Central System (SCS) using LA-ICP-MS. Mineral trace element concentrations were determined using spot analysis, whereas the matrix was analysed using line scans. The latter are considered to be representative of the bulk matrix composition due to the small grain size of the groundmass (< 50 µm) and the similarity of trace element patterns when compared to whole-rock alkaline lamprophyre analyses.

Calculated partition coefficients are generally in agreement with published D-values, but greatly add to the available data (Table 1).  $D^{\text{cpx/matrix}}$  values are similar to those determined from other alkaline lamprophyres [1], with the exception of higher LREE and some HFSE (Th, U and Nb) values. These elements could replace Ca and Al in clinopyroxene [2,3]. Published  $D^{\text{amph/matrix}}$  values from lamprophyric magmas are scarce. Our data are generally higher when compared to calculated values. However, amphibole composition is an important factor controlling trace element partitioning, such that higher Ca and Fe may result in higher REE D-values [4]. This is consistent with the higher REE and HFSE D-values determined in this study, but not with the high  $D_{\text{Sr}}$  (1.26), which could imply substitution of Ca and Na-K in M4 and A sites respectively. There is very little published  $D^{\text{phl/matrix}}$  data, particularly for REE. Our calculated partition coefficients are in agreement with LILE and HFSE D-values from other alkaline lamprophyres [1] and the new REE partitioning data greatly enhances the available data.

**Table 1.** Average mineral/matrix partition coefficients

	$D^{\text{cpx}}$	$D^{\text{amph}}$	$D^{\text{phl}}$		$D^{\text{cpx}}$	$D^{\text{amph}}$	$D^{\text{phl}}$
Rb	0.005	0.09	1.82	La	0.091	0.236	0.002
Sr	0.102	1.26	0.278	Ce	0.153	0.439	0.0004
Ba	0.003	0.435	2.88	Pr	0.223	0.559	0.004
Th	0.029	0.017	-	Nd	0.32	0.751	0.005
U	0.052	-	-	Sm	0.55	0.971	-
Ta	0.025	0.409	0.118	Eu	0.591	1.03	0.046
Nb	0.007	0.434	0.093	Gd	0.58	0.858	0.076
Hf	0.473	0.485	0.033	Dy	0.646	0.68	0.025
Zr	0.250	0.291	0.022	Yb	0.511	0.572	0.055
Y	0.587	0.577	0.008	Lu	0.447	0.495	-

To our knowledge this is the first attempt to estimate  $D^{\text{phenocrysts/matrix}}$  in camptonitic lamprophyres.

### References

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- [3] Wood B.J. and Trigila R. (2001) *CG* **172**, 213-223.
- [4] Bottazzi P. et al. (1999) *CMP* **137**, 36-45.