

Development of a simple and efficient two-step microwave-assisted digestion method for the determination of REEs, HFSEs and other elements in granite samples by ICP-OES

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Table A1: Spectral lines of REEs, HFSEs and other elements tested in different types of granite samples by ICP-OES analysis, response functions along with limit of detection (LOD)

Element	Selected spectral lines (nm)	Response function and Correlation coefficient (R ²)	LOD (mg/kg)
Rare earth elements (REEs)			
La	333.749	$y = 522079x - 344$ and $R^2 = 0.9999$	0.04
Ce	418.660	$y = 347311x - 3876$ and $R^2 = 0.9998$	0.01
Nd	430.357	$y = 292761x - 536$ and $R^2 = 0.9998$	0.02
Sm	359.262	$y = 370955x - 4050$ and $R^2 = 0.9997$	0.04
Eu	381.966	$y = 3508926x - 115$ and $R^2 = 0.9998$	0.03
Gd	342.246	$y = 458225x - 2022$ and $R^2 = 0.9999$	0.01
Dy	353.170	$y = 2550620x - 5965$ and $R^2 = 0.9999$	0.03
Er	349.910	$y = 1829864x - 12973$ and $R^2 = 0.9997$	0.08
Yb	328.937	$y = 5436414x - 2198$ and $R^2 = 0.9999$	0.02
Sc	361.384	$y = 540435x + 23$ and $R^2 = 0.9999$	0.06
Y	371.029	$y = 564937x + 62$ and $R^2 = 0.9999$	0.09
High field strength elements (HFSEs)			
Ti	334.941	$y = 269366x - 2834$ and $R^2 = 0.9999$	0.08
Zr	343.823	$y = 244842x - 1489$ and $R^2 = 0.9999$	0.11
Nb	316.340	$y = 211645x - 5437$ and $R^2 = 0.9999$	0.06
Hf	264.141	$y = 199997x + 216$ and $R^2 = 0.9999$	0.12
Th	401.913	$y = 137611x - 5142$ and $R^2 = 0.9998$	0.02
Other elements			
Al	396.152	$y = 33046x + 5635$ and $R^2 = 0.9999$	0.8
Ca	393.366	$y = 817466x + 157439$ and $R^2 = 0.9999$	0.2
Fe	238.204	$y = 192632x + 34027$ and $R^2 = 0.9998$	0.3
Sr	407.771	$y = 2878285x - 8941$ and $R^2 = 0.9999$	0.04
Ba	230.424	$y = 261891x + 2280$ and $R^2 = 0.9999$	0.5

Fig A1: EDS spectrum of residual solid obtained after first step of microwave digestion (MWD-1) and evaporation step (ES).

