

Part II Modelling Major Elements

In igneous geochemistry it is customary to discriminate between major ($> \text{ca. } 1 \text{ wt. } \%$) and trace ($< \text{ca. } 0.1 \text{ wt. } \%$) elements, with minor elements falling in between. However, no exact cut-off values have been codified separating these three groups. In the current book, we distinguish majors (occurring in large concentrations and combining to the main rock-forming minerals), dilute traces (that substitute only in very low concentrations in crystal lattice of other phases) and essential structural components (with low whole-rock contents but crystallizing own accessory minerals as soon as saturation is reached—see Part III). The main reason for such a division is that the approach to modelling of igneous processes does differ fundamentally among these three elemental groups.

This definition can lead to slightly unexpected results, whereby elements such as K would be regarded as traces in mafic/ultramafic systems, whereas Cr in ultramafic rocks or Zr or even REE in high-silica alkali magmas are major elements. Although somewhat unusual, this approach actually allows for a better description of the relevant systems.