**RFC-LFP005**

**Suggested problem**  
Find good models for modelling source rocks.  
  
  
**Suggested solution**

**GitHub Repository**

**Appendix A – Basic Mineralogic Relationships**

**A.1 Relationship between volume fractions and mass fractions**

Consider a dry rock sample with volume V and solid density that consists of several minerals m.   
  
For each mineral m, let further , , and be respectively the mass fraction, density and volume fraction of mineral m. In particular, the mass fraction may be expressed in terms of bulk density and bulk volume V:

Therefore we have the basic relationship between volume fraction and mass fraction

For a closed system we have

, the densities must obey the relationship

**A.2 Relationships for source rocks**

Let R be the ratio of mass of organic matter to the mass of organic carbon. If further is the density of organic matter, is the volume fraction of organic matter, the mass fraction of total organic contents TOC, then the ratio of mass of organic matter to the mass of organic carbon R is given by definition

Thus, solving for TOC, we get the result