



## **Magnetic unmixing: Where do we stand?**

David Heslop

The Australian National University, Research School of Earth Sciences, Acton, ACT, Australia (david.heslop@anu.edu.au)

Iron-bearing minerals are sensitive to a wide spectrum of natural processes and carry important environmental information. In environmental magnetism, various techniques are used to identify and quantify magnetic mineral assemblages in natural materials, with the aim of drawing inferences concerning past environments and environmental change. Natural materials typically contain a number of magnetic mineral subpopulations with different origins that can reflect multiple environmental processes. Thus, it is essential that the information carried by such mixed magnetic mineral assemblages can be quantified in terms of environmentally meaningful component parts. Magnetic unmixing techniques are designed to perform this quantification and can, thus, act as a cornerstone for interpreting complex environmental magnetic data. I will consider numerical strategies for unmixing magnetic mineral assemblages. Emphasis will be placed on the extent of available a priori knowledge concerning a magnetic mineral mixture and the ways that such information can be incorporated into a meaningful unmixing model.