

### **Igneous Framework of the South Apuseni Mountains, Romania**

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High grade Au epithermal and porphyry deposits are associated with calc-alkaline post subduction Neogene volcanism in the South Apuseni Mountains, Romania [1]. However, the processes involved in ore deposit formation in post-subduction settings are still debated. One of the key mechanisms is thought to be the melting of lower crustal cumulates [2]; however, the current view is that post-subduction magmatism in the Apuseni is derived from metasomatised mantle [3]. The geological history of the Apuseni Mountains involves 3 different magmatic events in the Jurassic, late Cretaceous and Neogene. The Neogene subvolcanic products are mainly porphyritic andesites with minor basaltic andesites, trachyandesites, microdiorites and dacites of the calc-alkaline series. Plagioclase, amphibole, biotite, pyroxene and quartz represent the main phenocryst phases and show regional variations in their modal content. One of the notable chemical characteristics of the Apuseni rocks is the presence of rocks with a high Sr/Y ratio, perhaps indicating high magmatic H<sub>2</sub>O. This project is investigating the magmatic evolution of the region towards wet, Au-Cu fertile melts in a post-subduction environment and the role of pre-Neogene activity in preconditioning the mantle, lower crust or both.

[1] Rosu et al (2004) SBMP **84**, 153-172. [2] Richards (2008) Geology **37**, 247-250. [3] Harris (2013) EPSL **366**, 122-136