« Trace elements in silicates/melts at high pressure »

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How trace elements are incorporated in silicate melts at depth, and how that may change with pressure?
To answer these questions, results obtained on a few key trace elements using x-ray absorption spectroscopy (XAS) and x-ray diffraction (XRD) techniques under high P-T conditions generated with a Paris-Edinburgh press will be presented [1-4]. Results will be compared with resistive-heating diamond-anvil cell studies. The final geological goal, *i.e.* how retention mechanisms relate to element partitioning between two co-existing phases will be discussed on the basis of in situ x-ray fluorescence (XRF) experiments.
The lecture will include the following aspects:
- Assembly designs
- Applications in Earth sciences
- Pros and Cons of XAS *vs* XRD
- Challenges and new scientific opportunities.

References
[1] - C. de Grouchy et al., EPSL **464**, 155 (2017).
[2] - C. Crépisson et al., Chem. Geol. **493**, 525 (2018).
[3] - A. Rosa et al., HPR **36**, 332 (2016).
[4] - B. Cochain et al., Chem. Geol. **404**, 18 (2015).