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