



16<sup>TH</sup> BIENNIAL MEETING  
**SGA 2022**

# 16<sup>th</sup> SGA BIENNIAL MEETING KEYNOTE SPEAKER

In concurrent session:  
*Antimony and related elements mineralisation: magmatism, fluids and sediments*

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## Anthony Pochon

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### Toward a better understanding of Sb metallogeny in the Variscan belt

Through the European Variscan belt, Sb deposits are often spatially associated with gold (as accompanying element or neighboring deposit) and they are classically assigned to orogenic gold systems, because of similar characteristics. Besides, they are sub-contemporaneous with a crustal-scale hydrothermal event linked to late-orogenic extension (~300 Ma). This event likely results from the exhumation of extensive metamorphic domes, which induced a strong temperature gradient and the subsequent metamorphic devolatilisation. However, if the metamorphic transition (i.e. from the greenschist to the amphibolite facies) constitutes a probable source of fluids and metals for gold deposits, particularly into the internal zone of the Variscan chain (e.g. French Massif Central), this is much less obvious for Sb deposits, especially within external and unthickened domains (e.g. Armorican Massif and Central Iberian Zone). Indeed, Sb mineralisation in the Armorican Massif and Central Iberian Zone shows spatial and temporal links with mafic magmatism emplaced around the Devonian-Carboniferous boundary (~360-350 Ma). Within these unthickened domains, Sb mineralisation is therefore likely to be emplaced following mafic magmas injections into the upper crust, synchronously with the beginning of the continental collision and before orogenic gold deposition. If the antimony is not directly associated with mafic dykes at surface, it could derive from mafic bodies at depth. We characterised one of these mafic bodies that is now outcropping in the Armorican belt (the gabbro of Saint-Jean-du-Doigt), and found evidence of Sb-bearing fluids in the central-upper part of the intrusion. We propose that a significant part of Sb and related metals concentrated in the mineralisation may come from the fluid phase coexisting with the mafic magma during crystallization. When confirmed, this would emphasize the critical role of early Carboniferous mafic magmatism as potential Sb source and constitute a major cornerstone for a better understanding of Sb mineralising systems.

### Anthony Pochon

Anthony is a young researcher in the Geology and Economy of Mineral resources department at the French Geological Survey (BRGM), Orléans, France. Its scientific expertise is at the crossroads of economic geology, geochemistry and petrology; he studies the mobility and redistribution of metals during hydrothermal fluid flow related to antimony and gold mineralising processes. He has particular experience with antimony deposits located in the Armorican Massif and the Central Iberian zone in the Variscan belt.

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