

## **Dating diagenesis of carbonate: *in situ* measurements by laser ablation**

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Speleothems are produced by the slow accumulation of calcium carbonate produced by the passage of dripping water containing Ca and CO<sub>2</sub> in sufficient amount to precipitate CaCO<sub>3</sub>.

The speleothem sample studied here comes from the Tertiary Mechta cave in the Thezeran karstic system, near lake Baikal, Eastern Siberia, and is the same specimen as the one described in Devès et al. (2012). It is a calcitic/aragonitic laminated corallite speleothem with presence of dissolution voids filled by amorphous opal. The material in this sample has a range in uranium contents from several ppm up to 1000 ppm U.

First attempts at dating the sample using thermal ionisation mass spectrometry U/Th-series gave results within error of secular radioactive equilibrium, thus suggesting an age out of the range attainable by this technique (>500 Ka, Devès et al 2012). We have obtained preliminary U-Pb data from laser ablation (193nm, Photon-Machines G2) coupled to an Attom HR-ICP-MS on different CaCO<sub>3</sub> laminas and opal zones that suggest an age of *ca.* 4.2 Ma for the whole sample, thus confirming the previously published U/Th-series results. Age differences between zones of pure CaCO<sub>3</sub> and opal-rich ones may be ascribed to carbonate deposition age and replacement by silica-rich fluids (diagenesis) ages. More laser ablation and ID-TIMS U-Pb ages will be produced for these zones, identified from imaging by scanning electron microscopy.

Reference: Devès, Perroux, Bacquart, Plaisir, Rose, Jaillet, Ghaleb, Ortega and Maire, (2012) *Chemical Geology* 294-295, p. 190-202.