



## **Speleothem dating using Sulfur to Calcium ratio**

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A speleothem sample from underground water tunnel in Nablus, Palestine, showed contamination from wastewater. The young sample has low concentration of Uranium and could not be dated with uranium thorium dating method. An alternative method was used to determine the age of the sample: lamina counting coupled with Sulfur to calcium ratio peaks counting. Sulfur and Calcium concentrations were measured using SEM-EDS to have a better resolution than the CNS analyzer. Assuming seasonal growth of laminations, it was possible to determine the primarily ages. The sinter was still growing during sampling in 2011. The counting reveals 271 laminae, for seasonal growth it means 135 years. In the 1959, it was observed that there is an unexpected peak of Sulfur to calcium ratio and this peak was repeated seasonally. The sulfur peak increased as a result of diesel use in the heating system during the winter season. For the youngest 117 laminae, 59 S/Ca peaks are observed. Each two lamination layers correspond to one peak. So, it was possible to determine the age of the sample using Sulfur to Calcium ratio.