



## **Ecology and geochemistry of deep-sea benthic foraminifera: a laboratory study**

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Since about 20 years, the isotopic composition and trace element ratios of foraminiferal shells have served to retrace past climatic changes. Unfortunately, the relations between the composition of the foraminiferal shell and the specific physico-chemical parameters of the environment in which the organism calcifies are still poorly understood. Studies in natural environments, comparing the ecology of recent benthic foraminifera with the stable isotopic composition and trace element ratios of their shells, have been performed, but the results are often ambiguous, because the calcification processes of these organisms are influenced by numerous interfering factors. The study of foraminifera under controlled laboratory conditions is a potential solution to this problem. It will allow us to better understand the effect of single environmental parameters on the isotopic composition and trace element ratios of the foraminiferal shell.

We investigate the temperature effect on the oxygen isotopic ratio ( $\delta^{18}\text{O}$ ) under controlled laboratory conditions. Monospecific experiments (*Bulimina marginata*) and plurispecific experiments with faunal assemblages (*Bolivina subaenariensis*, *Valvulineria bradyana*, *Hyalinea balthica*, *Uvigerina peregrina*...) are carried out at various temperatures (6, 8, 10, 12, 14°C). Living adult specimens marked using the calcein probe are isolated and incubated at these different temperatures. Food (dried green algae, diatoms...) is added in order to stimulate reproduction. After 3 months, the stable isotopic composition of specimens formed under controlled conditions will be analysed.