

## **Prof. PIERPAOLO ZUDDAS**

***SORBONNE UNIVERSITE***

***Unité Formation et Recherche : Terre Environnement Biodiversité***

**Pierpaolo Zuddas**, is *distinguish professor* of Geochemistry at Sorbonne Université (France). Italian by upbringing and education, he lived and worked in Italy, Canada and France. His career in geochemistry took from a position with the Marine Salt Agency (Italian Ministry of Finance) to the Non–Nuclear Energy Division (DGXII) of the European Union and then to academic university positions in Italy, Canada and France.

He investigates chemical, biological, and physical processes associated with the circulation of shallow waters and seawaters. He has used expertise in the field of thermodynamic and kinetics of geochemical reactions to develop theoretical, experimental and field studies on migration and reactivity in several natural and artificial conditions. Currently, he is involved in several international research programs on the consequences of climate change, the geochemical storage of CO<sub>2</sub> and the accumulation of Critical Metals for the energetic transition in ecosystems.

Prof. Zuddas taught at Universities of Cagliari and Catania (Italy), McGill (Canada), Denis Diderot, Claude Bernard Lyon1 (France) and Burapha (Thailand). He also served as Chair of the Institute of Environmental Engineering Eco-development in Lyon supervising 100 international students (both graduate and undergraduate) and managing a multicultural staff of 30 academic and non-academic lectures. In addition to given classes in water geochemistry, thermodynamics and analytical marine geochemistry and urban metabolism and urban regeneration at both undergraduate and graduate levels in several countries and languages, he supervised 20 PhD dissertations of students from different backgrounds and origin.

He coordinated, managed or co-managed international programmes on water quality in mining basins, urban and rural areas and media hosting CO<sub>2</sub> geological sequestration. Member of several scientific international associations, he also served as a reviewer for international scientific journals as well supranational and national scientific foundation grants. He has been technical expert to assess risk in policy issues regarding the water resources for national and supranational agencies as well private water and energy companies. He served as Secretary General for WRI 14 (Water-Rock Interaction Working Group of the International Association of Geochemistry and is presently the Chair. Author (or co-author) of more the 100 peer review publications and 150 congress presentation and 3 books, he organized 10 scientific sessions in international meetings.

Currently involved in several international research programs on the consequences of climate change and the geochemical CO<sub>2</sub> fate, Pierpaolo Zuddas regards how these processes affect the

quality of water resources including the socio-economic consequence. He is is fluent in Italian, French, English and Spanish.

### **Selected Publications**

Zuddas P. and Mucci A. (1994). Kinetics of calcite precipitation from seawater, I. A classical kinetics description for strong electrolyte solutions. **Geochim. Cosmochim. Acta** 58, 4353-4362.

De Giudici G., Zuddas P. (2001). *In situ* investigation of galena dissolution in oxygen saturated solution: evolution of surface and kinetic rate. **Geochim. Cosmochim. Acta** 65, 9, 1381-1389

Zuddas P, Pachana K, Faivre D. (2003). The influence of the dissolved organic matter on the kinetics of calcite crystal growth from seawater solutions. **Chem. Geology** 201, 91-101.

Guichet X., Zuddas P. (2003). Effect of secondary minerals on electrokinetic phenomena during water-rock interaction. **Geophys. Res. Lett.** 30, n°13, 1714-1718.

Faivre D. Zuddas P. (2006). An integrated approach to determine the origin of magnetite nanoparticles. **Earth and Planet. Sci. Lett.** 243, 53-60

Aloisi G., Gloter A. Krüger M. Wallmann K., Guyot F. **Zuddas P.** (2006). Nucleation of calcium carbonate on bacterial nano-globules. **Geology** 34,n.12, 1017-1020

Scislewski A. Zuddas P. (2010). Estimation of reactive mineral surface area during water-rock interaction using fluid chemical data. **Geochim. Cosmochim. Acta** 74, 6996–7007.

Zuddas P. (2010). Water - rock interaction processes seen through thermodynamics. **Elements** 6, 305-308.

P. Zuddas, J. Rillard, K. Charoenjit and P. Toulhoat (2014).. Limiting the risk inherent to geological CO<sub>2</sub> storage: The importance of predicting inorganic and organic chemical species behavior under supercritical CO<sub>2</sub> fluid conditions. **Greenhouse Gases: Science and Technology**. 4, 2, 200-209.

Zuddas P., Salvi S., Lopez O., De Giudici G., Censi P. (2018). Rapid migration of CO<sub>2</sub>-rich microfluids in calcite matrices. **Scientific Reports** 8:14080 |

Zuddas P., Lopes F. (2024) The effect of lunar declination on CO<sub>2</sub> degassing from central Italian Apennines. **The Innovation** 2 (2): 100073, June 12, 2024