

CURRICULUM VITAE

Name: Bourrié

First Name: Guilhem

Birth date: May 24th, 1949

Address: 296, Allées de Craponne
13300 Salon-de-Provence (France)

Phone: +33 4 90 42 08 41

E-mail: ghpbou@orange.fr

Languages: French (native language), English and Spanish (written and spoken).

1 Focus of my studies

My scientific studies have been focussed on soil - water interaction, as a means of:

- assessing the human impact on soils, as the water composition reflects *present* geochemical processes in soils, while solid composition is *inherited*, as the cumulative result of all processes occurred since soil formation;
- quantitatively modelling interactions between biogeochemical cycles of elements in soils;
- relating the mobility of major, minor and trace elements with environmental factors, in acid conditions, such as (Al, pH), for which I brought the first (1981–1990) evidence for the importance of polynuclear form of Al “Al₁₃” in Al control by equilibrium with gibbsite and in Al mobility and toxicity;
- relating hydromorphic conditions (E_h , pH) with Fe²⁺ mobility in solution, contributing to the discovery of fougérite (natural green rust) in gleysols;

- relating anthropogenic inputs (Cu, Zn, Cd, Pb etc. from sewage sludge, pig slurry, fertilizers) with heavy metals mobility.

I have progressively enlarged my interests from soil geochemistry to soil science, environmental science and geomorphology, now to cooperation with agronomists and economists.

In addition to academic publications, I have largely developed communications with engineers in charge of either agricultural development or industrial water treatment (Saur, Ondeo, Lafarge) with a global perspective.

I moved during six years to University and then back to INRA to create the research Unit at Aix-en-Provence, from 2000 to 2012. Since 2012, I moved to Avignon, to work on water reuse and salt-affected soils.

I was one of the founders of the *European Journal of Soil Science*, merging of previous Science du Sol (France), PEDOLOGIE (Belgium) and The Journal of Soil Science (United Kingdom), now the leading Journal in Soil Science. I have been Associate Editor of EJSS since its foundation (1994) to 2015.

I was awarded the Gold Medal of the Académie d’agriculture de France in 2010 for my “contribution to the understanding of physico-chemical processes in soils”.

I was elected a national corresponding member of the Académie d’agriculture de France in 2015.

I retired on March 1st 2016.

2 Main activities

2016– present: Working Group “Soils” of the Académie d’Agriculture de France, coordination of a book “Les sols au cœur de la zone critique: interactions avec l’eau” (Soils at the heart of the critical zone: interactions with water); Interacademic working group for development (GID).

2010–2016: Involved in a national and then european projects on integration of soil and water protection face to urban sprawl funded by France and “European Knowledge and innovation Community” (KIC) on Climate. Supervisor of theses in Algeria on hydrogeology and water geochemistry in northern Sahara (Ouargla) and salt-affected soils in Lower Cheliff valley (west Algeria), and in Tunisia.

2003–2010: Director of a thesis on salt-affected and compacted soils under forest or intensive (rice-cropping) agrosystems. I am involved in a project on the impact of urban spreading on soils and water, aiming to assess the impact of cities on their surrounding areas, in cooperation with economists, agronomists and

climatologists. This project is a partnership between private companies and public academic organizations supported by local government to help policy-makers and stakeholders. The method is intended to be applicable widely in developed or developing countries (Senegal, India, Viet-Nam . . .). Editor of books on “Surface formations”, to bridge soil science, surface geochemistry and geomorphology, and on “Phosphorus” (in french).

2005–2008 and 2013–2017: *Vice-Président of the Association Française pour l’Étude du Sol.*

2004–2009: Cooperation with Chile (Valparaiso University, Quillota Faculty of Agronomy) on soil contamination by Cu and acids.

2003–2005: Expert for the prospective of geochemistry for INRA.

2001–2003: Head of the Soil and Water Geochemistry Department, INRA, Aix-en-Provence.

1999–2001: In charge of the project of a new research Unit to be created at Aix-en-Provence. The aims of this project is to develop geochemical research at INRA towards a more sustainable agriculture in association with the major CNRS center in surface geochemistry, the Cerege (Centre européen de recherche et d’enseignement en géosciences de l’environnement), linking organic, inorganic and isotope geochemistry (stable, radiogenic and cosmogenic nuclides). This Unit has been now confirmed as a mixed CNRS-Aix-Marseille University-IRD-INRA-Collège de France Unit.

1993–1999: Professor at Rennes University

Professor in the Geosciences Department, with a full teaching charge (192 h/yr), delivering courses of soil science, clay mineralogy, water geochemistry, fluid-rock interactions, surface geodynamics, for undergraduate and graduate students, and organizing field training.

1997–1999: Coordination of a cooperative research program at the national level : Programme National “Sol et Érosion” (4 laboratories, from Rennes and Nancy) “Role of biogeochemical processes on mineralogical transformations of iron oxides in hydromorphic soils.”

1994–1998: Coordination of a cooperative research program on “Phosphorus dynamics” (2 laboratories from CNRS, Rennes University and INRA) associating

soil science, soil zoology and geochemistry, with the support of Ondeo (Suez-Lyonnaise des Eaux) (3 theses) to assess the risk of transfer of P from fertilizers and sewage sludge to surface waters, with eutrophication and additional cost of water treatment.

1992–1998: *3rd vice-president of IUSS Commission 2.2 Soil chemistry for the preparation of the 16th World Congress of Soil Science in Montpellier (France), 1998.*

1975-1993: Geochemist at INRA, Soil Science research Unit, in Rennes

1994–1998: Coordination of a cooperative research program with Syria on “Evolution and behaviour of salt-affected soils — Improvement of irrigation techniques and management of salt-affected soils” (INRA - Universities of Aleppo and Damascus).

1993: “Habilitation à diriger les recherches” thesis, University of Paris, Pierre et Marie Curie.

1989–1993: Cooperation with Spain (University of Santiago de Compostela) on soil and water geochemistry, aluminium speciation and aluminium control.

1986: Directeur de Recherches at INRA

1979: Chargé de Recherches at INRA

1975: Assistant de Recherches at INRA

1972–1976: Ph. D. thesis (Thèse de Docteur-Ingénieur) at CNRS / University Louis Pasteur, Strasbourg on “Mechanisms of the acquisition of solutes by water — Application to the weathering of granites in Vosges and Margeride (Central Massif) mountains, France”.

1967–1972: Agronomist from the Institut National Agronomique, Paris
Geologist from University of Paris, Pierre et Marie Curie.

3 Publications

I authored or co-authored more than 200 publications, among them 60 in peer-reviewed journals, 12 book chapters, more than 150 communications in congresses, and I edited one book. I am currently involved in coordination of an e-book on Soil and water, in the edition of a book on deserts and several book chapters.