

# Christophe Pécheyran

## *Isotopic and trace metal analysis by laser ablation-ICPMS*



Christophe Pécheyran is a research engineer (IR HC) at CNRS. He graduated from the University of Bordeaux in 1993 (master), where he obtained his PhD in Physical Chemistry (Analytical Chemistry and Environment) in 1997. From 1997 to 1999 he obtained a postdoctoral fellowship at UPPA for developing instrumentation in ICP, GC and microwave digesters. In 1999 he entered the CNRS. In 2014 he obtained his Habilitation in Analytical Chemistry from the University of Pau. Christophe Pécheyran is a member of the advisory board of Journal of Atomic Analytical Chemistry (RSC).

His scientific research concerns trace metal speciation and direct analysis of trace elements and their isotopes by laser ablation/ICPMS. For thirteen years his main field of research has been focused on the development of high repetition rate femtosecond laser instrumentation and applications. He develops new ablation approaches combining high-repetition rate-Fs with fast laser beam movement. They allow a virtual laser beam shaping for improved sensitivity and spatial resolution when coupled to ICPMS. He also studies laser-induced aerosol formation, sample transport, at different fs wavelengths (1030, 515, 257 nm). In 2010, he received awards from the French Chemical Society and the French Physics Society for these developments (Prix Instrumentation). More recently, in March 2017, he was awarded the CNRS Crystal Medal.

He created in 2011 a femtosecond instrumental park (PAMAL), opened to international researchers for collaboration and servicing. The PAMAL equipment is a unique instrumental park for direct analysis and imaging of trace elements and their isotopes by laser ICPMS. It includes 2 high repetition rate femtosecond lasers in the IR, Vis and UV, 1 HR-ICPMS, 1 MC-ICPMS, 1 Quad ICPMS. In the last three years, 37 academic institutes or private companies (40% out of France) have worked in the frame of PAMAL, which corresponds to 80 research scientists.

Beyond fundamental and instrumental developments he applies this technology to environmental (fish otolith migrations), archeology (dating prehistorical objects), petroleum

(upstream characterization of reservoirs), wine counterfeiting, non-proliferation of nuclear weapons (in collaboration with the French Atomic Energy Council (CEA)).

Christophe Pécheyran has published 83 peer-reviewed papers and was invited in over 40 international meetings. His H factor is 26 with 1863 citations.