Dr. Vincent Mortet, Ph.D

Date of birth: September 12th, 1971 – French

Education:

2001 - PhD degree in Physics, University of Valenciennes and Hainaut-Cambresis, Valenciennes, France

Work experience:

01/2024 – now: Senior scientist at Materials for Nano-systems and Biointerfaces (MNB) research group at Institute of Physics C.A.S. v.v.i.

11/2022 – 12/2024: CVD team lead, Quantum Brilliance, Freiburg, Germany (full-time) & Senior scientist at MNB research group at Institute of Physics C.A.S. v.v.i. (part-time)

12/2013 – 10/2022: Senior scientist and group leader of MNB research group at Institute of Physics C.A.S. v.v.i.

01/2011 – 10/2013: Researcher, LAAS-CNRS, Toulouse, France

03/2004 – 12/2010: Researcher, Institute for Materials Research, Hasselt, Belgium.

04/2003 – 02/2004: Post-doctoral researcher, Institute of Physics, Prague, Czech Republic

07/2001 – 03/2003: Post-doctoral researcher, Institute for Materials Research, Hasselt, Belgium

Fields of Expertise:

Material sciences; physics of semiconductors; vacuum technologies, physical and chemical vapor deposition methods, diamond synthesis; structural, optical and electrical characterizations; Micro-technologies; plasma characterizations.

Research activities:

I have been carrying out basic research at European level for more than 20 years on wide bandgap semiconductors synthesis (diamond, AlN, BN). I have a particular interest in study of thin film depositions, mostly CVD diamond, and their specific properties for their potential applications in electronics, electrochemistry, MEMS and acoustic sensors.

Recent project managements relevant to the scope of the proposal:

2020-22 - GACR 20-11140S (co-PI): "Essential Elements of Diamond Power Electronics"
2017-19 - GACR 17-05259S: "Electronic properties of doped diamond in high electric fields"
2016-17 - MSMT 35785SC: "High electric field properties of doped diamond and applications"
2013-17 - GACR 13-31783S: "Study of interfacial charge transfer process on boron and phosphorus doped diamond in contact with electrolyte solution"

Academic output and selected publications relevant to the scope of the proposal:

154+ publications in impacted journals, 2988 citations, h-index = 32 (Scopus), 3 patents, 1 book chapter.

- V. Mortet et al., "Properties of boron-doped (113) oriented homoepitaxial diamond layers" *Diam. Relat. Mater. 111 (2021) 108223* / This article reports on the electrical and structural properties of (113) oriented epitaxial diamond layers within a broad range of boron concentration.
- N. Lambert et al. "Modeling current transport in boron-doped diamond at high electric fields including self-heating effect" *Diam. Relat. Mater. 109 (2020) 108003* / This article discuss the origin of the super-exponential current voltage characteristic of boron-doped diamond at high electric field.
- V. Mortet et al, "Insight into boron-doped diamond Raman spectra characteristic features", *Carbon 115 (2017) 279* / This article is the first of a series that revise the analysis of boron-doped diamond Raman spectrum.
- V. Mortet et al. "Perticularities of high electric filed conduction in p-type diamond" *App. Phys. Lett. 108 (2016) 045005* / This article reports on the S-shape current voltage characteristic and the breakdown voltage at high electric field of boron-doped diamond.
- J. Pernot et al. "Hall hole mobility in boron-doped homoepitaxial diamond" Phys. Rev. B 81 (2010) 205203 / This article reports on the experiemental and theoretical study of the Hall hole mobility in boron-doped diamond in the case of low and high boron concentrations.