

SONG CHEN

Spin-Ion Technologies & Université Paris Saclay
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EDUCATION

- Université Paris Saclay** Palaiseau, France
Ph.D. Candidate
Jun. 2021 – Jun. 2024
Thesis Advisor: Dr. Dafiné Ravelosona (Director of CNRS, CTO of Spin-Ion Technologies), Dr. Noël Montblanco (Spin-Ion Technologies)
Research Interest: E-field controlled magnetism, Ion-material Simulation, Neuromorphic Computing, Machine Learning
- Rheinish-Westfälische Technische Hochschule Aachen (RWTH-Aachen)** Aachen, Germany
Master of Science – Materials Science
Jun. 2017 – Aug. 2020
Thesis Advisor: Prof. Dr -Ing Vescan Andrei, Prof. Dr. Andreas Offenhäuser, Dr. Dirk Mayer
Thesis Title: Flexible Micro-electrode Arrays for Biosensor Application
- Nanjing University, School of Foreign Studies** Nanjing, China
Certificate of Training - German
Feb. 2012 – Jan. 2013
- Nanjing Tech University, College of materials science and engineering** Nanjing, China
Bachelor of Engineering – Materials Science and Engineering
Jun. 2009 – Jul. 2013
- Coursera** Online
Python Programming (463/500), Business Communication (354/500), Deep Learning, Data Analysis, Machine Learning...

EXPERIENCE

- Spin-Ion Technologies** Palaiseau, France
Ph.D. Candidate
Jun. 2021 – Jun. 2024
Boosting Magneto-Ionics Effect using Ion Irradiation and Implantation
- CNR-IMM, Institute for Microelectronics and Microsystems** Milan, Italy
Visiting Student
Jun. 2023
Secondment (Ion-beam-induced chemical structure evolution)
- Aalto University, Department of Applied Physics** Aalto, Finland
Visiting Student
Jun. 2022, Dec. 2022
Secondment: E-field control of Spin-wave propagation
- Forschungszentrum Jülich, Bioelectronic IBI-3 & Helmholtz Nanoelectronic Facility** Jülich, Germany
Research Assistant
Jan. 2019 – Jun. 2020
Micro-fabrication of flexible micro-electrodes for biosensor applications
- Freelancer (Team For eCommerce Service Agency)** Aachen, Germany
Software Engineer, Team Leader
Jun. 2018 – Jun. 2021
Web Design and ERP Software Development

PROJECTS

- Marie Skłodowska-Curie Innovative Training Networks 2020 – BeMAGIC**
Study of the effect of ion irradiation and ion implantation (He⁺, Ga⁺, O₂-...) on the resulting structural and magnetic properties; Boosting magneto-Ionics effect in HM/FM/MO heterostructures
- I-VMS (I-V MEASUREMENT SYSTEM)**
Automation of the voltage actuation for the voltage-controlled magnetic anisotropy effect (VCMA).
Extension: Cyclic voltammetry, voltage pulse
- AHEMS (ANOMALOUS HALL EFFECT MEASUREMENT SYSTEM)**
Anomalous Hall effect measurement to obtain AHE hysteresis loops
- AUTOVA (AUTOMATED VCMA & ANOMALOUS HALL EFFECT MEASUREMENT SYSTEM)**
Automation of voltage actuation and Anomalous Hall Effect measurements in a sequential manner.

PUBLICATIONS & TALKS

- Co-author paper:** Figueroa-Miranda, Gabriela, et al. "Multi-target electrochemical malaria aptasensor on flexible multielectrode arrays for detection in malaria parasite blood samples." *Sensors and Actuators B: Chemical* 349 (2021): 130812.
- Co-author paper:** Pachat, Rohit, et al. "Magneto-ionics in annealed W/CoFeB/HfO₂ thin films." *Advanced Materials Interfaces* 9:36 (2022): 2200690.
- Co-author paper:** Zhou, Lei, et al. "Flexible multielectrode arrays based electrochemical aptasensor for glycated human serum albumin detection." *Sensors and Actuators B: Chemical* 386 (2023): 137370.

- **Poster presentation: reversible and non-volatile magneto-ionic effect in W-CoFeB-MgO-HfO₂ ultra-thin films with perpendicular magnetic anisotropy**, Song Chen, Elmer Montebalanco, Rohit Pachat, Liza Herrera Diez, Dafiné Ravelosona, *JEMS* 2023
- **Co-author paper: Ma, Zheng, et al. "Controlling Magneto-Ionics by Defect Engineering Through Light Ion Implantation."** *Advanced Functional Materials* (2024): 2312827.
- **Co-author paper (In Review): Tuning of perpendicular magnetic anisotropy in Bi-substituted yttrium iron garnet films by He⁺ ion irradiation** Sreeveni Das, Rhodri Mansell, Lukáš Flajsman, Lide Yao, Johannes W. van der Jagt, **Song Chen**, Dafiné Ravelosona, Liza Herrera Diez, and Sebastiaan van Dijken *Physical Review Materials*
- **First-author paper (In Review): Reversible and non-volatile magneto-ionic effect in W-CoFeB-MgO-HfO₂ ultra-thin films with perpendicular magnetic anisotropy**, Song Chen, Elmer Montebalanco, Rohit Pachat, Liza Herrera Diez, Dafiné Ravelosona, *JAP*

SERVICE

- **BEMAGIC CONFERENCE 2023**: Member of the committee (coordination of the invited speakers)

GRANTS AND FELLOWSHIPS

- **MARIE CURIE FELLOWSHIP**, 2020 – 2024, Early-Stage Researcher, Grant Number: 864415

PROFESSIONAL AFFILIATIONS

- **MEMBER**, Marie Curie Alumni Association member, 2021 – Present
- **MEMBER**, The European Magnetism Association, 2023 – Present

SKILLS SUMMARY

- **PROGRAMMING**: Python, Rust, JavaScript, HTML, CSS
- **TOOLS**: Git, Docker
- **LANGUAGES**: Mandarin (native), English (conversational), German (C1), French (Basic)
- **SIMULATION**: SRIM, SDTrimSP, RustBCA, Mumax3

REFERENCES

- **Dr. Dafiné Ravelosona** – Spin-Ion Technologies, 10 Bd Thomas Gobert, 91120 Palaiseau, dafine.ravelosona@spin-ion.com
- **Prof. Dr. Andreas Offenhäuser**– Forschungszentrum Jülich, Institute of Biological Information Processing – Bioelectronics (IBI-3), Wilhelm-Johnen-Straße, 52428 Jülich, a.offenhaeusser@fz-juelich.de
- **Dr. Dirk Mayer** – Forschungszentrum Jülich, Institute of Biological Information Processing – Bioelectronics (IBI-3), Wilhelm-Johnen-Straße, 52428 Jülich, dirk.mayer@fz-juelich.de
- **Prof. Dr.-Ing. Andrei Vescan** – Compound Semiconductor Technology Teaching and Research Area, Building 4242 Room 407, Sommerfeldstraße 18, 52074 Aachen, vescan@cst.rwth-aachen.de

