

## ***Curriculum Vitae***

Maria Chrysina

e-mail: m.chrysina@inn.demokritos.gr  
maria.chrysina@cec.mpg.de

- 2022-now Post-Doctoral Fellow/EPR and X-ray spectroscopy on Photosystem II  
Group Leader of the Max Planck Partner Group at INN  
Institute of Nanoscience and Nanotechnology, NCSR "Demokritos, Hellas
- 2020-2021 Post-Doctoral Fellow/pulse EPR on Photosystem II  
PI: Dr. George Mitrikas  
Institute of Nanoscience and Nanotechnology, NCSR "Demokritos, Hellas
- 2018-2019 Post Doctoral Fellow/EPR and X-ray spectroscopy on Photosystem II  
Department of Inorganic Spectroscopy, PI: Prof. Serena DeBeer  
Max Planck Institute for Chemical Energy Conversion, Mülheim an der Ruhr,  
Germany
- 2016-2017 Post-Doctoral Fellow/Advanced EPR on Photosystem II  
PI: Prof. Nicholas Cox, Prof. Wolfgang Lubitz  
Department of Biophysical Chemistry, Max Planck Institute for Chemical  
Energy Conversion, Mülheim an der Ruhr, Germany
- 2015 Post-Doctoral Fellow/pulse EPR on Photosystem II  
PI: Dr. George Mitrikas  
Institute of Nanoscience and Nanotechnology, NCSR "Demokritos, Hellas

## **EDUCATION**

---

- 2011-2015 PhD in Chemistry  
Title: "Radical – metal collaboration during photosynthetic water oxidation"  
University of Athens, Faculty of Chemistry  
Supervisor: Prof. Panayotis Kyritsis  
Institute of Nanoscience and Nanotechnology, NCSR "Demokritos"  
Supervisor: Dr. Vasili Petrouleas
- 2009-2011 MSc in Inorganic Chemistry  
University of Athens, Faculty of Chemistry  
Thesis: "Changes in water splitting complex during the S<sub>2</sub> to S<sub>3</sub> transition.  
Study by EPR spectroscopy."  
Supervisors: Dr. Vasili Petrouleas and Prof. Panayotis Kyritsis  
Institute of Nanoscience and Nanotechnology, NCSR "Demokritos"
- 2004-2009 BSc in Biology  
University of Athens, Faculty of Biology  
Diploma thesis: "Study of the photosynthetic oxidation of water using EPR  
spectroscopy", Supervisors: Dr. Vasili Petrouleas and Prof. Stavros  
Hamodrakas

## SKILLS

---

Continuous wave and pulsed EPR spectroscopy (X, Q, W band)  
Synchrotron-based X-ray Absorption and Emission spectroscopy  
Isolation of PS II supercomplex from spinach  
Samples' illumination using Nd-YAG laser  
Python, MatLab

## TEACHING

---

2010-2014

Inorganic chemistry laboratories for undergraduate students of the Physics and Biology Faculty, University of Athens.

## PUBLICATIONS

---

M. Chrysina, M. Drosou, D. A. Pantazis, S. DeBeer, Ammonia Binding to the Oxygen-Evolving Complex Probed by High-Energy Resolution Fluorescence Detected X-Ray Absorption Spectroscopy (2025) *J. Phys. Chem. B* 129, 3776–3787

M. Chrysina, M. Drosou, R. G. Castillo, M. Reus, F. Neese, V. Krewald, D. A. Pantazis, S. DeBeer, Nature of S-States in the Oxygen-Evolving Complex Resolved by High-Energy Resolution Fluorescence Detected X-ray Absorption Spectroscopy (2023) *J. Am. Chem. Soc.* 145, 47, 25579–25594

M. Chrysina, G. Zahariou, N. Ioannidis, Y. Sanakis, G. Mitrikas, Electronic structure of Tyrosyl D radical of Photosystem II, as revealed by 2D-Hyperfine Sublevel Correlation Spectroscopy (2021) *Magnetochemistry* 7(9), 131

N. Stamos, E. Ferentinos, M. Chrysina, C. Raptopoulou, V. Psycharis, Y. Sanakis, D. Pantazis, P. Kyritsis, G. Mitrikas, Unusual <sup>31</sup>P hyperfine strain effects in a conformationally flexible Cu(II) complex revealed by two-dimensional pulse EPR spectroscopy (2020) *Inorg. Chem.* (59) 3666-3676

M. Chrysina, E. Heyno, Y. Kutin, M. Reus, H. Nilsson, M. Nowaczyk, S. DeBeer, F. Neese, J. Messinger, W. Lubitz, N. Cox, Five-coordinate Mn<sup>IV</sup> intermediate in the activation of nature's water splitting cofactor (2019) *PNAS* 116 (34), 16841-16846

W. Lubitz, M. Chrysina, N. Cox, Water Oxidation in Photosystem II, (2019) *Photosynthesis Research* 142, 105–125

M. Chrysina, J. de Mendonça Silva, G. Zahariou, D. Pantazis, N. Ioannidis, Proton Translocation via Tautomerization of Asn298 During the S<sub>2</sub>-S<sub>3</sub> State Transition in the Oxygen-Evolving Complex of Photosystem II (2019) *J. Phys. Chem. B* 123, 3068-3078

Morton, M. Chrysina, V. Craig, F. Akita, Y. Nakajima, W. Lubitz, N. Cox, J-R. Shen, E. Krausz, Structured Near-Infrared Magnetic Circular Dichroism spectra of the Mn<sub>4</sub>CaO<sub>5</sub> cluster of PS II in *T. vulcanus* are dominated by Mn(IV) d-d 'spin-flip' transitions (2018) *BBA - Bioenergetics* 1859, 88–98

G. Zahariou, M. Chrysina, V. Petrouleas, N. Ioannidis, Can we trap the  $S_3Y_2^{\cdot}$  metalloradical intermediate during the S-state transitions of Photosystem II? An EPR investigation (2014) FEBS Letters 588, 1827–1831

M. Chrysina, G. Zahariou, Y. Sanakis, N. Ioannidis, V. Petrouleas, Conformational changes of the  $S_2Y_2^{\cdot}$  intermediate of the  $S_2$  to  $S_3$  transition in photosystem II (2011) J Photochem. Photobiol. B 104, 72-79

M. Chrysina, G. Zahariou, N. Ioannidis, V. Petrouleas, Conversion of the  $g = 4.1$  EPR signal to the multiline conformation during the  $S_2$  to  $S_3$  transition of the oxygen evolving complex of Photosystem II (2010) Biochim Biophys Acta 1797, 487-493.

### CONFERENCES/WORKSHOPS

---

- |                |   |
|----------------|---|
| May 2025       | Oral presentation at North America, Greece and Cyprus Conference (NAGC), Syros, Greece                                  |
| April 2024     | Oral presentation at North America-Greece-Cyprus Conference on Paramagnetic Materials, Protaras, Cyprus                 |
| October 2023   | Oral presentation at the 11 <sup>th</sup> Conference of the Hellenic Crystallographic Association, Larissa, Greece      |
| May 2023       | Oral presentation at the Joint CTMN/NAGC Conference, Spetses, Hellas.   |
| September 2022 | Oral presentation at the PARACAT Workshop: Electron Paramagnetic Resonance in Catalysis, Athens.                        |
| March 2021     | Oral presentation at the “Athens Conference on Advances in Chemistry (acac2020)”, online                                |
| October 2021   | Oral presentation at the 10th International Conference of the Hellenic Crystallographic Association, Athens.            |
| October 2018   | MPG seminar for post-docs: Making a Lasting Impression in Science through Communication, Cologne, Germany               |
| July 2018      | MPG seminar for post-docs: Effective Proposal Writing, Goettingen, Germany  |
| June 2018      | ARPE-GIRSE joint EPR school, Marseille, France  |
| June 2018      | Poster presentation at the first European Congress on Photosynthesis Research, Uppsala, Sweden                          |
| September 2017 | Summer School on “Electronic Structure and Spectroscopy of Transition Metal complexes”, Gelsenkirchen, Germany          |
| May 2017       | Oral presentation at the North America – Greece - Cyprus Workshop on Paramagnetic Materials, Paphos, Cyprus.            |
| November 2016  | Oral presentation at the Catalysis conference, Department of Chemistry, University of Athens                            |
| October 2016   | Poster presentation at the Nordic Photosynthesis Congress, Copenhagen.  |
| August 2016    | Poster presentation at the 17 <sup>th</sup> International Congress on Photosynthesis Research, Maastricht, Netherlands. |

August 2016	Summer school on molecular mechanics, Vienna.
April 2016	Poster presentation at the 79th Harden Conference: "Oxygen Evolution and Reduction - Common Principles", Innsbruck, Switzerland.
September 2015	Poster presentation at the international conference "Photosynthesis Research for sustainability", Crete, Hellas.
June 2015	Oral presentation at the Sixth North America – Greece - Cyprus Workshop on Paramagnetic Materials, Acropolis Museum, Athens.
August 2013	Poster presentation at the 16 <sup>th</sup> International Congress on Photosynthesis Research, Saint - Louis, USA.
July 2011	Oral presentation at the 1 <sup>st</sup> Summer School on Proteins, Faculty of Biology, University of Athens.

### **REVIEWING**

2021-now	Reviewer in Photosynthesis Research Journal
----------	---

### **AWARDS – FUNDING**

2025	Two-year Grant from the H.F.R.I. Research Project for Postdoctoral Researchers
2021-now	Five-year grant from Max Planck Society for creating a Max Planck Partner group in NCSR "Demokritos" in collaboration with Prof. Serena DeBeer, Department of Inorganic Spectroscopy, MPI for Chemical Energy Conversion
2020-2021	"Photosynthetic water splitting: the critical steps prior to O <sub>2</sub> evolution" co-financed by Greece and the European Union (European Social Fund-ESF) MIS103
2018-2025	7 successful synchrotron beamtime proposals for measurements of Photosystem II at ESRF, SSRL and SOLEIL synchrotron facilities
2009	Four-year scholarship for postgraduate studies from the NCSR "Demokritos"

### **OTHER PROGRAMS**

2016-2018	MANGAN, national funded, Germany, aiming to elucidate the capability of Mn-based compounds as catalysts for the electrochemical oxygen evolution reaction
2015	"Advanced materials and devices for energy collection and conservation», NCSR " Demokritos

### **LANGUAGES**

Greek: mother tongue.  
 English: First Certificate, University of Cambridge, UK.  
 German: basic knowledge