

Dr. Alexios K. Plessas

Department of Chemistry
National and Kapodistrian University of Athens (UoA)
Panepistiopolis, 157 71 Zografou, Greece
Tel.: +30-210-7274231
email: aplessas@chem.uoa.gr



ORCID: <https://orcid.org/0000-0003-3284-3451>

Date of Birth: December 3rd, 1994, Athens, Greece
Nationality: Greek

EDUCATION:

- Ph.D. in Chemistry (March 2019 – October 2022), Department of Chemistry, National and Kapodistrian University of Athens (UoA), Athens, Greece (Supervisor: Professor Giannis S. Papaefstathiou).
- Master's Degree in Inorganic Chemistry (October 2017 – February 2019), Department of Chemistry, National and Kapodistrian University of Athens (UoA), Athens, Greece (Supervisor: Professor Giannis S. Papaefstathiou).
- B.Sc. in Chemistry (September 2012 – December 2017), Department of Chemistry, National and Kapodistrian University of Athens (UoA), Athens, Greece (Supervisor: Professor Giannis S. Papaefstathiou).

LANGUAGES

- Greek (native)
- English (C2 level, ECPE degree)
Examination for the Certificate of Proficiency in English, University of Michigan.

RESEARCH EXPERIENCE:

- Post-Doc researcher (December 2022 – Present), Supervisor: Professor Giannis S. Papaefstathiou, Department of Chemistry, National and Kapodistrian University of Athens (UoA), Athens, Greece.
Project Title: *"Metal-Organic Frameworks as sorbents for water remediation from heavy metal ions"*
- Post-Doc researcher (November 2020 – October 2022), Supervisor: Professor Giannis S. Papaefstathiou, Department of Chemistry, National and Kapodistrian University of Athens (UoA), Athens, Greece.
Project Title: *"3D printed, wearable sensors, based on Metal-Organic Frameworks, for the electrochemical detection of glucose in human perspiration."*
- Postgraduate Research Ph.D. (March 2019 – October 2022), Supervisor: Professor Giannis S. Papaefstathiou, Department of Chemistry, National and Kapodistrian University of Athens (UoA), Athens, Greece.
Thesis Title: *"Synthesis and characterization of new Metal-Organic Frameworks' properties"*
- Postgraduate Research M.Sc. (October 2017 – February 2019), Supervisor: Professor Giannis S. Papaefstathiou, Department of Chemistry, National and Kapodistrian University of Athens (UoA), Athens, Greece.
Thesis Title: *"Metal-Organic Framework based on Single Molecule magnets"*

- Undergraduate Research – “Diplomatic Work” (September 2015 – February 2017), Supervisor: Professor Giannis S. Papaefstathiou, Department of Chemistry, National and Kapodistrian University of Athens (UoA), Athens, Greece.

Thesis Title: “*Metal-Organic Frameworks based on Mixed Ligand Approach*”

- Undergraduate Research (May 2014 – September 2015), Supervisor: Professor Giannis S. Papaefstathiou, Department of Chemistry, National and Kapodistrian University of Athens (UoA), Athens, Greece.

Thesis Title: “*Research and Development of Polynuclear Clusters Based on Manganese*”

EXPERIMENTAL TECHNIQUES AND SKILLS:

- Synthesis of metal ion complexes (monomers, polynuclear metal complexes, coordination polymers, metal-organic frameworks).
- Synthesis via solid state chemistry, solution chemistry, solvothermal conditions and layering techniques.
- Purification of chemical compounds.
- Crystallization (growth of single crystals) of chemical compounds.
- Characterization of chemical compounds with thermal techniques (TG/DTG, DTA, DSC) and spectroscopic methods IR, far-IR, Raman, UV/VIS, and NMR (Bruker DPX-300 and DRX-400).
- Characterization with crystallographic techniques (Single crystal X-ray diffraction, Powder X-ray diffraction), crystal structure analysis and refinement.
- Qualitative and quantitative analysis of metal ions using instrumental methods.
- Topological analysis of polymeric networks.
- Computer working environments (DOS/WINDOWS/LINUX).
- Molecular visualization (ChemOffice, ChemWin, Mercury), NMR analysis software.
- Usage of Cambridge Structural Database (Cambridge Crystallographic Data Center).

TEACHING

Assistant at undergraduate laboratory training

- Laboratory of Inorganic Chemistry III, Department of Chemistry, UoA. (2019-2020, 2021-2022)
- Laboratory of Inorganic Chemistry I, Department of Chemistry, UoA. (2018-2020, 2021-2023)

Supervising of Undergraduate students

- Athanasia Koskoletou – “Diplomatic Work” (September 2021 – Present), Department of Chemistry, National and Kapodistrian University of Athens (UoA), Athens, Greece.
Thesis Title: “*Metal-Organic Frameworks*”
- Vasiliki Kiriakopoulou – “Diplomatic Work” (September 2021 – Present), Department of Chemistry, National and Kapodistrian University of Athens (UoA), Athens, Greece.
Thesis Title: “*Synthesis and Characterisation of new Metal-Organic Frameworks*”
- Ioannis Vagiakos – “Diplomatic Work” (September 2021 – June 2022), Department of Chemistry, National and Kapodistrian University of Athens (UoA), Athens, Greece.
Thesis Title: “*Synthesis of new Metal-Organic Frameworks: MOF-74 analogues.*”
- Nikoleta Giouchanna - “Diplomatic Work” (October 2020 – October 2021), Department of Chemistry, National and Kapodistrian University of Athens (UoA), Athens, Greece.
Thesis Title: “*Metal-Organic Frameworks for electrochemical detection of glucose.*”

PUBLICATIONS

4. Koukouviti, E., **Plessas, A. K.**, Pagkali V., Economou A., Papaefstathiou G. S. & Kokkinos C. "3D-printed electrochemical glucose device with integrated Fe(II)-MOF nanozyme." *Microchimica Acta*, 2022, 190(7), 1-9
3. Koukouviti, E., **Plessas, A. K.**, Economou, A., Thomaidis, N., Papaefstathiou, G. S. & Kokkinos, C. "3D Printed Voltammetric Sensor Modified with an Fe(III)-Cluster for the Enzyme-Free Determination of Glucose in Sweat." *Biosensors*, 2022, 12(12), 1156.
2. Vasiliou, F., **Plessas, A. K.**, Economou, A., Thomaidis, N., Papaefstathiou, G. S. & Kokkinos, C. "Graphite paste sensor modified with a Cu(II)-complex for the enzyme-free simultaneous voltammetric determination of glucose and uric acid in sweat." *J. Electroanal. Chem.* 2022, 917, 116393.
1. Diamantis, S. A., Hatzidimitriou, A., **Plessas, A. K.**, Pournara, A., Manos, M. J., Papaefstathiou, G. S. & Lazarides, T. "Alkaline earth-organic frameworks with amino derivatives of 2,6-naphthalene dicarboxylates: structural studies and fluorescence properties". *Dalton Transactions*, 49(46), 16736-16744 (2020).

PRESENTATIONS AT CONFERENCES

8. **Plessas, A.K.**; Oikonomopoulos, P.; Kotidis, P.; Papaefstathiou, G.S. "Synthesis and characterisation of MOF-COOHs for water remediation: Pre- and post-synthetic modification approach of amide ligands". 1st Mediterranean Conference on Porous Materials (MEDPore23), 17-19/5/2023, Rethimno, Greece. Talk.
7. **Plessas, A.K.**; Pagkali, V.; Kritikou, E.; Panara, A.; Economou, A.; Thomaidis, N.S.; Kokkinos, C.; Papaefstathiou, G.S. "MOF-74 analogues and Cu(II) compounds as electrode modifiers for the electrochemical detection of glucose in human perspiration and / or glucose sorption." Athens Conference on Advances in Chemistry (ACAC2022) 26/6-1/7/2022, Athens, Greece. Talk.
6. **Plessas, A.K.**; Pagkali, V.; Kritikou, E.; Panara, A.; Economou, A.; Thomaidis, N.S.; Kokkinos, C.; Papaefstathiou, G.S. "MOF-74 analogues and Cu(II) compounds as electrode modifiers for the electrochemical detection of glucose in human perspiration and / or glucose sorption." 2022 North America - Greece - Cyprus Conference on Paramagnetic Materials (NAGC 2022), 9-13/5/2022, Ayia Napa, Cyprus. Talk.
5. Koukouviti, H.; Vasileiou, F.; **Plessas, A.K.**; Economou, A.; Thomaidis, N.; Papaefstathiou, G. S.; Kokkinos C. "3D Printed Voltammetric Sensor Modified with an Fe(III) Cluster for Nonenzymatic Determination of Glucose in Sweat." 12th International Conference on Instrumental Methods of Analysis (IMA-2021), 20-23/9/2021, Thessaloniki, Greece. Poster.
4. **Plessas, A.K.**; Papaefstathiou, G. S. "MOF-74 Analogues for glucose sorption and/or electrode modifiers for the electrochemical detection of glucose in human perspiration" Athens Conference on Advances in Chemistry (ACAC2020) 10-14/3/2021, Athens, Greece. **Award winning Talk.**
3. **Plessas, A. K.**; Coletta, M.; Brechin, E. K.; Papaefstathiou, G. S. "Carboxylic Salicyladloxime: A ligand with a double role in Polymetallic Compound and Metal-Organic Frameworks' synthesis" 21st Postgraduate Chemistry Students' Conference, 15-17/5/2019, Voutes, Heraklion, Greece. Talk.
2. **Plessas, A. K.**; Brechin, E. K.; Papaefstathiou, G. S. "Metal-Organic Frameworks based on Single Molecule Magnets" Athens Conference on Advances in Chemistry (ACAC 2018), 30/10 – 2/11, Panepistimioupolis, Athens, Greece. Poster.
1. **Plessas, A. K.**; Brechin, E. K.; Papaefstathiou, G. S. "Metal-Organic Frameworks based on Single Molecule Magnets" 20th Postgraduate Chemistry Students' Conference, 25-27/6/2018, Voutes, Heraklion, Greece. Talk.