

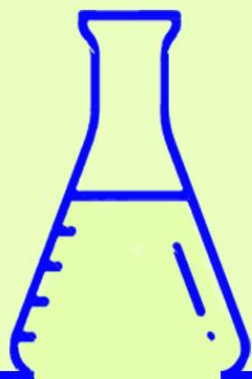


# ATHENS CONFERENCE ON ADVANCES IN CHEMISTRY

10-14 MARCH 2021



NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS  
DEPARTMENT OF CHEMISTRY



## BOOK OF ABSTRACTS

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## Flash Presentations

| Wednesday 10/3/2021 |                    | Thursday 11/3/2021 |                    | Friday 12/3/2021 |                         | Saturday 13/3/2021 |                    |
|---------------------|--------------------|--------------------|--------------------|------------------|-------------------------|--------------------|--------------------|
| <b>Session 1</b>    | <b>13:15-14:15</b> | <b>Session 3</b>   | <b>13:30-14:25</b> | <b>Session 5</b> | <b>12:15-13:15</b>      | <b>Session 7</b>   | <b>12:45-13:00</b> |
| 13:15-13:20         | P. Ioannou         | 13:30-13:35        | I. Martinaiou      | 12:15-12:20      | P. Angelopoulou         | 12:45-12:50        | S. Karavoltsos     |
| 13:20-13:25         | A. Athanasoulis    | 13:35-13:40        | T. Depastas        | 12:20-12:25      | F. Arfara               | 12:50-12:55        | N. Zikos           |
| 13:25-13:30         | Y. Batsi           | 13:40-13:45        | K. Palli           | 12:25-12:30      | P. Christakopoulos      | 12:55-13:00        | M. Mavridi         |
| 13:30-13:35         | S. Chalkidis       | 13:45-13:50        | M. Douloudi        | 12:30-12:35      | M. Kasimati Tzanne      |                    |                    |
| 13:35-13:40         | E. Chontzopoulou   | 13:50-13:55        | K. Mansouris       | 12:35-12:40      | O. Kokkorogianni        |                    |                    |
| 13:40-13:45         | E. Kaplanai        | 13:55-14:00        | M. Mermingi        | 12:40-12:45      | F. Kontoes Georgoudakis |                    |                    |
| 13:45-13:50         | S. Vassiliou       | 14:00-14:05        | M. Panou           | 12:45-12:50      | I. Kyroglou             |                    |                    |
| 13:50-13:55         | G. Rotas           | 14:05-14:10        | E. Papamichalis    | 12:50-12:55      | E. Mygiakis             |                    |                    |
| 13:55-14:00         | E. Tonis           | 14:10-14:15        | A. Stavropoulou    | 12:55-13:00      | C. Pantazidis           |                    |                    |
| 14:00-14:05         | N. Tzouras         | 14:15-14:20        | C.E. Tzeliou       | 13:00-13:05      | A. Schiza               |                    |                    |
| 14:05-14:10         | L. Zorba           | 14:20-14:25        | A. Androutsopoulos | 13:05-13:10      | P. Thimi                |                    |                    |
| 14:10-14:15         | A. Gkionis         |                    |                    | 13:10-13:15      | C. Zisis                |                    |                    |
|                     |                    |                    |                    |                  |                         |                    |                    |
| <b>Session 2</b>    | <b>18:00-19:15</b> | <b>Session 4</b>   | <b>18:15-19:20</b> | <b>Session 6</b> | <b>17:30-18:25</b>      | <b>Session 8</b>   | <b>14:30-14:50</b> |
| 18:00-18:05         | N. Kostopoulou     | 18:15-18:20        | M. Antoniadou      | 17:30-17:35      | G. Raptopoulos          | 14:30-14:35        | E. Makarona        |
| 18:05-18:10         | S. Vassiliou       | 18:20-18:25        | A. Katsenis        | 17:35-17:40      | R. Barrulas             | 14:35-14:40        | M. Momčilović      |
| 18:10-18:15         | P. Mavroeidi       | 18:25-18:30        | A. Soultati        | 17:40-17:45      | E. Effraimopoulou       | 14:40-14:45        | K. Rogotis         |
| 18:15-18:20         | I. Temponeras      | 18:30-18:35        | G. Tarlas          | 17:45-17:50      | P. Herman               | 14:45-14:50        | P. Tsave           |
| 18:20-18:25         | L. Chiniadis       | 18:35-18:40        | K. Ypsiplantis     | 17:50-17:55      | F. Leontaridou          |                    |                    |
| 18:25-18:30         | T. Koutsikou       | 18:40-18:45        | G. Belessiotis     | 17:55-18:00      | K. Moldován             |                    |                    |
| 18:30-18:35         | E. Tsagkogiannis   | 18:45-18:50        | S. Balou           | 18:00-18:05      | V. Baikenova            |                    |                    |
| 18:35-18:40         | V. Vakali          | 18:50-18:55        | I. Ibrahim         | 18:05-18:10      | J. Chinonso Egu         |                    |                    |
| 18:40-18:45         | N. Zoupanou        | 18:55-19:00        | M. Kourmousi       | 18:10-18:15      | M. Ranga                |                    |                    |
| 18:45-18:50         | F. Machairioti     | 19:00-19:05        | P. Oikonomopoulos  | 18:15-18:20      | T. H. Thanh Truc        |                    |                    |
| 18:50-18:55         | K. M. Lyra         | 19:05-19:10        | A. Plessas         | 18:20-18:25      | B. Bernardes            |                    |                    |
| 18:55-19:00         | D. Prokopiou       | 19:10-19:15        | G. Lazopoulos      |                  |                         |                    |                    |
| 19:00-19:05         | A. Papadopoulou    | 19:15-19:20        | S. Balou           |                  |                         |                    |                    |
| 19:05-19:10         | C. Chalkiadakis    |                    |                    |                  |                         |                    |                    |
| 19:10-19:15         | C. Vasileiou       |                    |                    |                  |                         |                    |                    |

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|--------------------------------|--|
|                                | <b>Alexandros Androutsopoulos, Theodoros Depastas, Ioannis Karapetsas and Demeter Tzeli (NKUA, Greece)</b>   |
| <b>SESSION 4 (18:15-19:20)</b> |  |
| 18:15-18:20                    | Metal oxide photocatalysts for photoelectrochemical energy production<br><b>Maria Antoniadou, Michalis K. Arfanis and Polycarpos Falaras (NCSR "Demokritos", Greece)</b>   |
| 18:20-18:25                    | Mechanochemical synthesis of sustainable amide functionalized MOFs for water remediation – "SAFeMOFs"<br><b>A. M. Fidelli, A. D. Katsenis and G. S. Papaefstathiou (NKUA, Greece)</b>  |
| 18:25-18:30                    | Improved environmental stability of perovskite photoactive layer mixed with functionalized porphyrin molecules<br><b>Anastasia Soutati, Konstantinos Tsevas, Athanassios G. Coutsolelos and Maria Vasilopoulou (NCSR "Demokritos", Greece)</b> |
| 18:30-18:35                    | Post-synthetic modified MOFs for water remediation applications<br><b>Georgios D. Tarlas and Giannis S. Papaefstathiou (NKUA, Greece)</b>  |
| 18:35-18:40                    | Organometallic complexes of $[(\eta^5\text{-cp})\text{Ru}(12[\text{CPP}]))\text{PF}_6$<br><b>Konstantinos Ypsilantis, Theodoros Tsolis and Achilleas Garoufis (UOI, Greece)</b>  |
| 18:40-18:45                    | Stable performance of DSSCs under "pan-illumination" lighting conditions through optimized electrolyte formulation<br><b>George V. Belessiotis and Polycarpos Falaras (NCSR "Demokritos", Greece)</b>  |
| 18:45-18:50                    | Binding affinity of a diimine-dithiolene Ni(II) complex with bovine serum albumin: spectroscopic and docking Studies<br><b>S. Balou, A. Daflou, M. Vlara and C.A. Mitsopoulou (NKUA, Greece)</b>   |
| 18:50-18:55                    | Silver-modified $\text{TiO}_2/\text{g-C}_3\text{N}_4$ nanocomposites for photocatalytic degradation of water contaminants<br><b>Islam Ibrahim and Polycarpos Falaras (NKUA, Greece)</b>  |
| 18:55-19:00                    | Photocatalytic hydrogen evolution through TGA coated Cd-Te QDs and Ni (II) complexes<br><b>M. Kourmoussi, F. Kamatsos and C.Mitsopoulou (NKUA, Greece)</b>   |
| 19:00-19:05                    | A new oxalamide-based 3D Fe-MOF for potential glucose sorption and electrochemical detection in human perspiration via electrode modification.<br><b>Panagiotis Oikonomopoulos and Giannis S. Papaefstathiou (NKUA, Greece)</b>                |
| 19:05-19:10                    | MOF-74 Analogues for glucose sorption and/or electrode modifiers for the electrochemical detection of glucose in human perspiration.<br><b>Alexios K. Plessas and Giannis S. Papaefstathiou (NKUA, Greece)</b>                                 |
| 19:10-19:15                    | Binary-Ternary coordination complexes of flavonoids and trivalent metal ions. Design, synthesis and characterization.<br><b>Georgios Lazopoulos, Sevasti Matsia, Antonios Hatzidimitriou and Athanasios Salifoglou (AUTH, Greece)</b>          |
| 19:15-19:20                    | Biological evaluation of tris-heteroleptic ruthenium complexes with DNA and BSA, docking studies analysis  |

# **Improved environmental stability of perovskite photoactive layer mixed with functionalized porphyrin molecules**

Anastasia Soultati<sup>1</sup>, Konstantinos Tsevas<sup>1</sup>, Athanassios G. Coutsolelos<sup>2</sup>, and Maria Vasilopoulou<sup>1</sup>

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Photovoltaic devices based on organo-metal halide perovskites have not yet reached the theoretically predicted power conversion efficiency while they still exhibit poor environmental stability, due to the penetration of moisture and oxygen into the perovskite absorber which accelerates the device degradation<sup>1</sup>. In this work, we demonstrate the use of appropriately porphyrin molecules with functional groups as dopants of methylammonium lead triiodide (MAPbI<sub>3</sub>) precursor. In particular, the stability upon exposure to environmental conditions for 720 hours of the prepared undoped and porphyrin-doped perovskite films was investigated. XRD pattern of the undoped perovskite film presented a large increase in intensity of the PbI<sub>2</sub> peak as well as significant loss of crystallinity. On the other hand, the reduction in crystallinity of the PbI<sub>2</sub> peak is lower in the porphyrin-doped perovskite, suggesting that the enhanced stability of doped film is attributed to the hydrophobic nature of the dye. The effects of quicker degradation of the undoped perovskite film were also detected by UV-Vis absorption measurements, where significant changes in the shape and intensity of the absorption spectrum of the undoped film were observed, while improved homogeneity and larger grain size were appeared in the surface of the porphyrin-doped film after 720 hours, as revealed from scanning electron microscopy measurements.

## Acknowledgment

This research is co-financed by Greece and the European Union (European Social Fund- ESF) through the Operational Programme «Human Resources Development, Education and Lifelong Learning» in the context of the project “Reinforcement of Postdoctoral Researchers - 2nd Cycle” (MIS-5033021), implemented by the State Scholarships Foundation (IKY).

## References:

1. S. Wang, Y. Jiang, E. J. Juarez-Perez, L. K. Ono, Y. Qi, *Nat. Energy* **2**, 16195 (2017).