Curriculum Vitae
Dr George Kakavelakis

Nationality: Greek
Place of Birth: Chania, Greece
Date of Birth: 15/04/1989
Mobile Phone: +41779500356
+306982975794
e-mail:
georgios.kakavelakis@epfl.ch
gk415@cam.ac.uk

Google scholar link
LPI-EPFL link
NMS-Cambridge link
Linkedin link

POSITIONS AND RESEARCH EXPERIENCE

Since 13/12/2022	**Elected Assistant Professor of Printed Nanoelectronics,** Department of Electronic Engineering, Hellenic Mediterranean University.
Since 01/09/2021	**Marie-Skłodowska Curie Individual Fellow**, Host institution: Ecole Polytechnique Fédérale de Lausanne, Laboratory of Photonics and Interfaces (Prof. Michael Graetzel)
04/2020 – 31/09/2021	**Junior Research Fellow**, Wolfson College, University of Cambridge, elected under the academic Title B1 by the governing body of the college.
09/2018 – 31/08/2021	**Postdoctoral Research Associate in (Opto)-Electronic Devices Based on Graphene, Related Materials and Hetero Structures** at the Cambridge Graphene Centre, University of Cambridge (Prof. Andrea C. Ferrari), UK.
06/2012 – 09/2018	**Research Assistant**, Diploma/Master/PhD Thesis, University of Crete and Hellenic Mediterranean University, Heraklion, Greece (Prof. Emmanuel Kymakis and Prof. George Kioseoglou).
03/2012 – 06/2012	**Research Assistant**, Internship, Foundation for Research and Technology – Hellas, Division of Laser Interactions and Photonics, Heraklion, Greece (Dr Emmanuel Stratakis).

EDUCATION

06/2015-07/2018	**PhD, Materials Science** Department of Materials Science and Technology, University of Crete, Greece. Thesis title: "Advanced interface engineering for solution-processable photovoltaics.". Supervisor: Prof. G. Kioseoglou and Prof. E. Kymakis.
9/2013 – 6/2015	**MSc, Materials Science** Department of Materials Science and Technology, University of Crete, Greece. Master thesis title: "Device engineering for enhanced performance & stability of organic photovoltaics". Supervisor: Prof. G. Kioseoglou and Prof. E. Kymakis .
9/2008 – 9/2013	**BSc, Materials Science and Technology** Department of Materials Science and Technology, University of Crete, Greece. Diploma thesis title: "Nanoparticles based plasmonic organic photovoltaics". Supervisor: Prof. G. Kioseoglou and Prof. E. Kymakis.

AWARDS AND ACHIEVEMENTS

04/2015	Co-author publication as cover in Advanced Functional Materials
05/2015	Co-author publication as cover in Advanced Optical Materials
09/2015	StableNextSol COST Action MP1307 Mobility Grant (€1000), International School on Hybrid and Organic Photovoltaics (ISOPHOS) – 9th Edition
01/2016	First author publication as cover in the high impact factor journal Advanced Energy Materials (I.F. 25.2)
02/2016	Excellence research award (€50000) IKY/Siemens for study towards a PhD
07/2016	EuroScience Open Forum (ESOF)/Graphene Flagship Mobility Grant (€1000)
10/2016	StableNextSol COST Action MP1307 Mobility Grant (€2500), Visiting PhD Student University of Rome 'Tor Vergata', Department of Electronics Engineering, Center for Hybrid and Organic Solar Energy (C.H.O.S.E.), Rome, Italy
02/2017	First author publication in the high impact factor journal ACS Nano (I.F. 13.9).
04/2017	First author and corresponding author publication in the high impact factor journal Advanced Energy Materials (I.F. 25.2). This work has already attracted 114 citations.
12/2017	First author publication in ACS Sensors demonstrating the first ever reported ozone sensor based on metal halide perovskites.
02/2018	Co-first author and corresponding author publication in the high impact factor journal Energy & Environmental Science (I.F. 30.2)
04/2018	First author publication in the high impact factor journal Advanced Energy Materials (I.F. 25.2).
9/2018	Postdoctoral research associate appointement at the University of Cambridge
11/2018	Invited to attend the European Graphene Flagship roadmapping workshop on graphene for perovskite solar cells. Organized by Fraunhofer-Institute for Systems and Innovation Research, Frankfurt.
03/2019	Invited seminar presentation at Graphene CDT Advanced Technology Lectures, University of Cambridge, Department of Engineering.
07/2019	Invited talk at 2019 2D Conference in Wyboston Lakes, UK.
07/2019	First author and corresponding author book chapter publication in Springer, Singapore.
09/2019	UK Patent application filed. Title: GRAPHENE BASED ELECTRODE MATERIAL FOR FABRICATING A FULLY-PRINTABLE PEROVSKITE SOLAR CELL.
04/2020	Elected Junior Research Fellow (JRF) at Wolfson College, Cambridge.
05/2020	Invention disclosure submitted. Title: INTERFACIAL ENGINEERING AND POST DEVICE FABRICATION TREATMENT FOR HIGHLY EFFICIENT FULLY PRINTED PEROVSKITE SOLAR CELLS
06/2020	Listed as distinguished alumni on the website of the Department of Materials Science & Technology, University of Crete.
02/2021	Invited Lecture, Sci-Café Colloquial Talks, Hellenic Mediterranean University
02/2021	Awarded the Marie-Skłodowska Curie Individual Fellowship with a total score of 98% (Total Funding: 191.000 euro).
02/2021	Featured in the cover page of the Greek daily newspaper 'Patris'.
06/2021	Shortlisted for a Lecturer/Senior Lecturer position in Energy Technologies at the Advanced Technology Institute and the Department of Electrical & Electronic Engineering of Surrey University.
07/2021	Co-organizer and co-chair of an online intensive summer school in layered materials and applications with more than 800 registered participants and 24 invited speakers.

09/2021	Invited Talk at Graphene Week 2021 International Conference
09/2021	Invited Chair in Poster Session Group 06 - Synthesis and growth, exfoliation and related methods, Graphene Week 2021 online international conference
09/2021	Invited Review Editor on the Editorial Board of Optoelectronic Materials (specialty section of Frontiers in Electronic Materials).
11/2021	Invited Talk at 2D-HAPES2021Online International Conference
12/2021	Shortlisted for an Assistant Professor Position at Department of Chemistry of University of Crete.
12/2021	Shortlisted for an Assistant Professor Position at Department of Chemistry of University of Athens.
01/2022	Shortlisted for an Assistant Professor Position at Department of Materials Science and Engineering of University of Ioannina.
04/2022	Invited Seminar at Technical University of Crete, Department of Electrical and Computer Engineering
05/2022	Invited Seminar at Imperial College London, Department of Chemistry
05/2022	Invited Seminar at University of Surrey, Department of Electrical and Electronic Engineering
09/2022	Plenary Invited Speaker at 3RD International conference in electronic engineering (EEITE 2022), information technology & education, Hellenic Mediterranean University.
09/2022	Invited lecture at 2022 European Researchers' Night (organized under the frame of MSCA), House of Culture-Rethymnon, Greece.
10/2022	Joined the Editorial Board of Processes/Energy Systems, MDPI
12/2022	Elected as Assistant Professor of Printed Nanoelectronics, Department of Electronic Engineering, Hellenic Mediterranean University.

PARTICIPATION IN RESEARCH PROJECTS

1) Research assistant, Archimedes III (ΑΡΧΙΜΗΔΗΣ ΙΙΙ - Ενίσχυση Ερευνητικών Ομάδων του ΤΕΙ Κρήτης / Υποέργο 10 «Σχεδιασμός και κατασκευή νανοδομημένων οργανικών φωτοβολταϊκών στοιχείων με βελτιστοποιημένη συμπεριφορά), TEI of Crete, Greece from 12/2012 – 06/2013.
2) Research assistant, 'Penelope' project (Πλασμονικά νανοσωματίδια για αποδοτικές, σταθερές και φθηνές οργανικές φωτοβολταϊκές διατάξεις), TEI of Crete, Greece from 20/11/2014 to 31/07/2015.
3) Research assistant, European Graphene Flagship Rump-up phase, T.E.I. of Crete, Greece from 17/12/2014 to 25/05/2015 and from 26/05/2015 to 15/01/2016.
4) PhD Scholar, Hybrid Solar Cells based on organic-inorganic perovskites with high stability and reduced hysteresis (Υβριδικά Φωτοβολταϊκά οργανικών-ανόργανων περοβσκιτών υψηλής σταθερότητας και μειωμένης υστέρησης), IKY-SIEMENS PhD Scholarship, T.E.I. of Crete, Greece, 01/10/2015 – 31/08/2017.
5) Research Associate and project leader, European Graphene Flagship Core 2, University of Cambridge, from 24/9/2018 to 31/3/2020.
6) Research Associate and project leader, European Graphene Flagship Core 3, University of Cambridge, from 1/4/2020 to 25/7/2021.
7) Research Associate, ERC Synergy Grant 'Hetero 2D', University of Cambridge, from 24/9/2018 to 31/10/2020
8) Research Associate, EPSRC Grand Challenge project 'Engineering van der Waals heterostructures', University of Cambridge, from 1/11/2020 to 30/6/2021.
9) Research Associate, EU FP7 project 'Neurofibres', University of Cambridge, from 1/11/2020 to 30/6/2021.
10) Principal Investigator and experienced researcher, Marie Sklodowska-Curie Individual Fellowship H2020, GNPs4PVs (01/09/2021 – 31/08/2023)

Mentorship at the University of Cambridge (Wolfson College)

04/2020 – 09/2021	**PhD Mentorship program in Engineering** – Wolfson College, University of Cambridge. Mentor of Mr Chunhui Yao, PhD Student.

TEACHING

09/2014 – 02/2016	**Supervisor** – Advanced Materials and Microelectronics: Laboratory Course, Department of Electrical and Computer Engineering, Hellenic Mediterranean University. Co-author of the theoretical and experimental guidelines book.
01/2016 – 04/2016	**Development and teaching of an online intensive course** with title 'Perovskite solar cells: An Introduction' under the frame of the EU Erasmus+ project, Electronics for the beyond the silicon era (ELBYSIER).
02/2016 – 06/2018	**Supervisor** – Hard Mater: Laboratory Course, Department of Materials Science and Technology, University of Crete
09/2018 - 07/2021	**Teaching Assistant** at the EPSRC Centre for Doctoral Training in Graphene Technology, Research Skills Set module RSS2: Liquid phase exfoliation of graphene and its printing and electrical properties
09/2018 - 07/2021	**Teaching Assistant** at the EPSRC Centre for Doctoral Training in Graphene Technology, Graphene and Related Materials (GRM1) Lectures, Science of Graphene, Related Layered Materials and Hybrid Systems. Lecture title: "Solution-Processable Photovoltaics".

PROFESSIONAL QUALIFICATIONS AND ACTIVITIES

- **Referee** for Journal of Materials Chemistry C, ChemSusChem, ACS Applied Materials & Interfaces, Scientific Reports, Nanoscale Advances, Nanoscale, Solar RRL, Advanced Functional Materials, Proceedings of the National Academy of Sciences of the United States of America and 2D Materials, Progress in Photovoltaics: Research and Applications.
- **Review Editor** on the Editorial Board of Optoelectronic Materials (specialty section of Frontiers in Electronic Materials).
- **Associate Editor** and member of the editorial board of Energy Systems, Processes, MDPI.

PARTICIPATION AS EDITOR IN SPECIAL ISSUES

1) Topic editor in Frontiers in Physics, Frontiers Media. Research Topic: 2D Materials, Halide Perovskites and Their Heterostructures for Optoelectronic Applications.
2) Guest editor in Processes-MDPI, Special Issue "State-of-the-Art of Organic Photovoltaics (DSSCs, OPVs) and Perovskite Solar Cells (PSCs)".

ORGANIZATION OF INTENSIVE COURSES

1) Member of the organizing committee, organizer and moderator, Intensive Course in Layered materials and applications, 12 – 16 July 2022, 823 registered participants and 24 invited lecturers.
2) Member of the organizing committee, organizer and moderator, , Intensive Course in Metal Halide Perovskites: From Materials to Applications, 7 – 11 November 2022, 15 invited lecturers.

EXPERIMENTAL SKILLS

Fabrication of metal halide perovskite solar cells (mesoscopic and planar *n-i-p*/*p-i-n* architecture) and bulk heterojunction organic solar cells (inverted and standard architecture); Characterization of photovoltaic devices using steady state electrical (dark J-V, light dependent J-V, J-V, MPPT, External Quantum Efficiency) and transient electrical (Transient Photovoltage, Transient Photocurrent) measurements; Liquid phase exfoliation (microfluidization, high pressure homogenization and ultrasonication) of graphene and other layered materials; Formulation and printing (spray-coating, blade coating and screen printing) of solution processed electrode materials (graphene and metal nanowire based-inks) for photovoltaics, LEDs, sensors, supercapacitors, photodetectors; Cleanroom work for

transfer and chemical/molecular doping of CVD graphene; Handling of glove box system (including Vacuum Thermal Evaporator for organic and inorganic films deposition, spin coater, ozone cleaner etc.).

KEY RESPONSIBILITIES

- 11/2021 – present
  Lab manager of Solid-State Lab. in LPI, EPFL. The lab. facilities include: an Ar-filled glove box, three dry glove boxes, two fume hoods and a laser scriber.
- 9/2018 – 7/2021
  Superuser and person in charge for training of the following equipment in Cambridge Graphene Centre: 1) N_2-filled glove box with integrated thermal evaporator (MBRAUN), 2) Solar Simulator (Newport) and 3) External Quantum Efficiency setup (Photonic Solutions).
- 9/2018 – 7/2021
  Responsible and project leader for all metal halide perovskite optoelectronics related research activities of the Cambridge Graphene Centre.
- Lab manager of Solid State Lab. in LPI, EPFL. The lab. facilities include: an Ar-filled glove box, three dry glove boxes, two fume hoods and a laser scriber.
- 1/2019 – 7/2021
  In charge for the organization of the monthly group meeting of the Cambridge Graphene Centre.

PUBLICATIONS AND CONFERENCE CONTRIBUTIONS

I have 40 publications in peer reviewed journals (h-index:25; Citations:>2000), 7 corresponding authorships, 1 book chapter, 17 conference contributions, 17 Symposium/Colloquium lectures and 1 international patent application. A full list of my publications and conference contributions can be found below.

Peer Reviewed Journals

40) **G. Kakavelakis**,[*] K. Dimos, T. Ahmed, J.Marcellino, M. Graetzel, A. C. Ferrari Microfluidized graphene current collectors for fully printed perovskite solar cells, 2022 (Submitted) ([*] corresponding author).

39) E. A. Alharbi, A. Krishna, N. Lempesis, M. Dankl, I. M. Lois, M. A. Hope, T. P. Baumeler, **G. Kakavelakis**, A. Mishra, F. Eickemeyer, O. Ouellette, T. Chawanpunyawat, A. Hagfeldt, S. M. Zakeeruddin, L. Emsley, L. Pfeifer, U. Rothlisberger, M. Grätzel, Reconfiguring the alkylammonium salts for highly efficient and stable perovskite solar cells, 2022 (Submitted).

38) T. P. Baumeler, E. A. Alharbi, **G. Kakavelakis,** G. C. Fish, B. I. Carlsen, J. H. Yum, M. D. Mensi, J. Gao, F. T. Eickemeyer, J.-E. Moser, S. M. Zakeeruddin, M. Grätzel, , Surface passivation of rich-$FAPbI_3$ perovskite with caesium iodide outperforms bulk incorporation, 2022 (Submitted) ([#]co-first author).

37) R. Runjhun, E. A. Alharbi, Z. Drużyński, A. Krishna, M. Wolska-Pietkiewicz, V. Škorjanc, T. P. Baumeler, **G Kakavelakis**, F. Eickemeyer, M. Mensi, S. M. Zakeeruddin, M. Graetzel, J. Lewinski, Zwitterionic-Capped-ZnO Quantum Dots and Interfacial Engineering Using Ammonium Halides for High-Efficiency Planar Perovskite Solar Cells, 2022 (Submitted).

36) S. Akhavan, A. Taheri Najafabadi, M. Abdi Jalebi, A. Ruocco, I. Paradisanos, O. Balci, Z.Andaji Garmaroudi, **G. Kakavelakis**, I. Goykhman, L. G. Occhipinti, S. D. Stranks, A. C. Ferrari, High responsive fiber phototransistors via rolled graphene/perovskite hybrids, 2021 (Submitted).

35) A. R. Cadore, B. L. T. Rosa, D. De Fazio, I. Paradisanos, S. Mignuzzi, J. E. Muench, **G. Kakavelakis**, S. M. Shinde, S. Tongay, K. Watanabe, T. Taniguchi, E. Lidorikis, I. Goykhman, G. Soavi, and A. C. Ferrari, WS_2-LED electroluminescence enhancement by TFSI treatment, 2021 (Submitted)

34) **G. Kakavelakis**, M. Gedda, A. Panagiotopoulos, E. Kymakis, T.D. Anthopoulos, K. Petridis, Metal Halide Perovskites for High-Energy Radiation Detection, Adv. Sci., 2020, 7, 2002098.

33) E. Gagaoudakis, A. Panagiotopoulos, T. Maksudov, M. Moshogiannaki, D. Katerinopoulou, **G. Kakavelakis**, G. Kiriakidis, V. Binas, E. Kymakis, K. Petridis, Self-powered, flexible and room temperature operated solution processed hybrid metal halide p-type sensing element for efficient hydrogen detection, *J. Phys. Mater.*, 2020, 3, 014010.

32) G. Perrakis,* **G. Kakavelakis**,* G. Kenanakis, C. Petridis, E. Stratakis, M. Kafesaki, E. Kymakis, Efficient and environmental-friendly perovskite solar cells via embedding plasmonic nanoparticles: an optical simulation study on realistic device architecture, *Optics Express*, 2019, 27, 31144 (*** Corresponding authors**).

31) M. Stylianakis, T. Maksudov, A. Panagiotopoulos, **G. Kakavelakis**, K. Petridis, Inorganic and Hybrid Perovskite Based Laser Devices: A Review, *Materials*, 2019, 12, 859.

30) I. Konidakis, T. Maksudov, E. Serpetzoglou, **G. Kakavelakis**, E. Kymakis, E. Stratakis, Improved charge carrier dynamics of CH3NH3PbI3 perovskite films synthesized by means of laser-assisted crystallization, *ACS Appl. Energy Mater.*, 2018, 1, 5101–5111.

29) **G. Kakavelakis*** E. Kymakis, C. Petridis,* Two – dimensional materials beyond graphene for metal halide perovskite solar cells, *Adv. Mater. Interf.*, 2018, 5, 1800339 (*** Corresponding authors**).

28) L. Ciammaruchi, R. Oliveira, A. Charas, Tulus, E. von Hauff, G. Polino, F. Brunetti, R. Hansson, E. Moons, M. Krassas, **G. Kakavelakis**, E. Kymakis, J. G. Sánchez, J. Ferre-Borrull, L. F. Marsal, S. Züfle, R. Roesch, D. Fluhr, T. Faber, U. S. Schubert, H. Hoppe, K. Bakker, S. Veenstra, G. Zanotti, E. Katz, I. Visoly-Fisher, A. Pälvi, B. Romero, T. A. Tumay, E. Parlak, L. M. Stagno, V. Turkovic, H.-G. Rubahn, M. Madsen, V. Kažukauskas, M. Lira-Cantu, S. Shanmugam, Y. Galagan, Stability of Organic Solar Cells with PCDTBT donor polymer: an inter-laboratory study, *Journal of Materials Research*, 2018, 33, 1909-1924.

27) C. Petridis,*,# **G. Kakavelakis**,*,# E. Kymakis,* Renaissance of graphene-related materials in photovoltaics due to the emergence of metal-halide perovskite solar cells, *Energy Environ. Sci.*, 2018, 11, 1030-1061 (*** Corresponding authors, # authors with equal contribution**).

26) **G. Kakavelakis**, I. Paradisanos, B. Paci, A. Generosi, M. Papachatzakis, T. Maksudov, L. Najafi, A. E. Del Rio Castillo, G. Kioseoglou, E. Stratakis, F. Bonaccorso, E. Kymakis, Extending the continuous operating lifetime of perovskite solar cells with a molybdenum disulfide hole extraction interlayer, *Adv. Energy Mater.* 2018, 8, 1702287.

25) K. Petridis,* **G. Kakavelakis**,* M.M. Stylianakis, E. Kymakis, Graphene Based Inverted Planar Perovskite Solar Cells: Advancements, Fundamental Challenges and Prospects, *Chem. Asian J.* 2018, 13, 240–249 (* **Authors with equal contribution**).

24) **G. Kakavelakis**, E. Gagaoudakis, K. Petridis, V. Petromichelaki, V. Binas, G. Kiriakidis, E. Kymakis, A solution processed $CH_3NH_3PbI_{3-x}Cl_x$ perovskite based self-powered ozone sensing element operated at room temperature, *ACS Sens.* 2018, 3, 135–142.

23) C. L. Chochos, A. Katsouras, S. Drakopoulou, C. Miskaki, M. Krassas, P. Tzourmpakis, **G. Kakavelakis**, C. Sprau, A. Colsmann, B. Squeo, V. G. Gregoriou, E. Kymakis, A. Avgeropoulos, Effects of alkyl side chains positioning and presence of fused aromatic units in the backbone of low-bandgap diketopyrrolopyrrole copolymers on the optoelectronic properties of organic solar cells, *J. Polym. Sci. A* 2018, 56, 138–146.

22) E. Serpetzoglou, I. Konidakis, **G. Kakavelakis**, T. Maksudov, E. Kymakis, E. Stratakis, Improved Carrier Transport in Perovskite Solar Cells Probed by Femtosecond Transient Absorption Spectroscopy, *ACS Appl. Mater. Interfaces* 2017, 9, 43910–43919.

21) **G. Kakavelakis**, C. Petridis, E. Kymakis, Recent advances in plasmonic metal and rare-earth-element upconversion nanoparticles doped perovskite solar cells, *J. Mater. Chem. A* 2017, 5, 21604-21624.

20) M. M. Stylianakis, D. Konios, C. Petridis, **G. Kakavelakis**, E. Stratakis, E. Kymakis, Ternary solution-processed organic solar cells incorporating 2D materials, *2D Mater.* 2017, 4, 042005.

19) **G. Kakavelakis**, A. Esau Del Rio Castillo, P. Tzourmpakis, A. Ansaldo, V. Pellegrini, E. Stratakis, E. Kymakis, F. Bonaccorso, Size-tuning of WSe_2 flakes for high efficiency inverted organic solar cells, *ACS Nano* 2017, 11, 3517–3531.

18) **G. Kakavelakis**[*], K. Alexaki, E. Stratakis, E. Kymakis[*], Efficiency and Stability enhancement of Inverted Perovskite Solar Cells via the addition of metal nanoparticles in the Hole Transport Layer, *RSC Adv.* 2017, 7, 12998-13002 ([*]**corresponding author**).

17) A. Agresti, S. Pescetelli, A. L. Palma, A. E. Del Rio Castillo, D. Konios, **G. Kakavelakis**, S. Razza, L. Cinà, E. Kymakis, F. Bonaccorso, A. Di Carlo, Graphene Interface Engineering for Perovskite Solar Modules: 12.6% Power Conversion Efficiency over 50 cm^2 Active Area, *ACS Energy Lett.* 2017, 2, 279–287.

16) B. Paci, **G. Kakavelakis**, A. Generosi, J. Wright, C. Ferrero, E. Stratakis, E. Kymakis, Improving stability of organic devices: a time/space resolved structural monitoring approach applied to plasmonic photovoltaics, *Sol. Energy Mater Sol. Cells* 2017, 159, 617–624.

15) **G. Kakavelakis**[*], T. Maksudov, D. Konios, I. Paradisanos, G. Kioseoglou, E. Stratakis, E. Kymakis[*], Efficient and Highly Air Stable Planar Inverted Perovskite Solar Cells with Reduced Graphene Oxide doped PCBM Electron Transporting Layer, *Adv. Energy Mater.* 2017, 7, 1602120 ([*]**corresponding author**).

14) C. Petridis, D. Konios, M. Stylianakis, **G. Kakavelakis**, M. Sygletou, K. Savva, P. Tzourmpakis, M. Krassas, N. Vaenas, E. Stratakis, E. Kymakis, Solution-Processed Reduced Graphene Oxide Electrodes for Organic Photovoltaics, *Nanoscale Horiz.* 2016, 1, 375-382.

13) A. Agresti, S. Pescetelli, L. Cina, D. Konios, **G. Kakavelakis**, E. Kymakis, A. Di Carlo, Efficiency and stability enhancement in perovskite solar cells by inserting lithium-neutralized graphene oxide as the electron transporting layer, *Adv. Funct. Mater.* 2016, 26, 2686–2694.

12) D. Konios[*], **G. Kakavelakis**[*], C. Petridis, K. Savva, E.Stratakis, E. Kymakis, Highly efficient organic photovoltaic devices utilizing work-function tuned graphene oxide derivatives as the anode and cathode charge extraction layers, *J. Mater. Chem. A* 2016, 4, 1612-1623 ([*] **Authors with equal contribution**).

11) **G. Kakavelakis**, I. Vangelidis, A. Kanaras, E. Lidorikis, E. Stratakis, E. Kymakis, Plasmonic Backscattering Effect in High-Efficient Organic Photovoltaic Devices, *Adv. Energy Mater.* 2016, 6, 1501640, [**Appeared in the back cover for Adv. Energy. Mater.**].

10) B. Paci, **G. Kakavelakis**, A. Generosi, V. Rossi Albertini, J. P. Wright, C. Ferrero, D. Konios, E. Stratakis, E. Kymakis, Stability enhancement of organic photovoltaic devices utilizing partially reduced graphene oxide as the hole transport layer: nanoscale insight into structural/interfacial properties and aging effects, *RSC Adv.* 2015, 5, 106930-106940.

9) M. M. Stylianakis, D. Konios, **G. Kakavelakis**, G. Charalambidis, E. Stratakis, A. G. Coutsolelos, E. Kymakis, S. H. Anastasiadis, Efficient ternary organic photovoltaics incorporating a graphene-based porphyrin molecule as a universal electron cascade material, *Nanoscale* 2015, 7, 17827-17835.

8) M. Krassas, **G. Kakavelakis**, M. Stylianakis, N. Vaenas, E. Stratakis, E. Kymakis, Efficiency enhancement of organic photovoltaic devices by embedding uncapped Al nanoparticles in the hole transport layer, *RSC Adv.* 2015, **5**, 71704-71708.

7) M. Sygletou, **G. Kakavelakis**, B. Paci, A. Generosi, E. Kymakis, E. Stratakis, Enhanced stability of Aluminum nanoparticles doped organic solar cells, *ACS Appl. Mater. Interfaces* 2015, 7, 17756–17764.

6) E. Kymakis, G. D. Spyropoulos, R. Fernandes, **G. Kakavelakis**, A. G. Kanaras, E. Stratakis, Plasmonic bulk heterojunction solar cells: The role of nanoparticle ligand coating, *ACS Photonics* 2015, 2, 714–723

5) D. Konios, C. Petridis, **G. Kakavelakis**, M. Sygletou, K. Savva, E. Stratakis, E. Kymakis, Reduced graphene oxide micromesh electrodes for large area, flexible organic photovoltaic devices, *Adv. Funct. Mater.* 2015, 25, 2213-2221 [**Appeared in the inside front cover for Adv. Funct. Mater.**].

4) M.M. Stylianakis, M. Sygletou, K. Savva, **G. Kakavelakis**, E. Kymakis, E. Stratakis, Photochemical Synthesis of Solution-Processable Graphene Derivatives with Tunable Bandgaps for Organic Solar Cells, *Adv. Opt. Mater.* 2015, 5, 658-666, [**Appeared in the inside front cover for Adv. Opt. Mater.**].

3) **G. Kakavelakis**, D. Konios, E. Stratakis, E. Kymakis, Enhancement of the Efficiency and Stability of Organic Photovoltaic Devices via the Addition of a Lithium-Neutralized Graphene Oxide Electron-Transporting Layer, *Chem. Mater.* 2014, 26, 5988–5993.

2) **G. Kakavelakis**, E. Stratakis, E. Kymakis, Synergetic Plasmonic Effect of Al and Au Nanoparticles for Efficiency Enhancement of Air Processed Organic Photovoltaic Devices, *Chem. Commun.* 2014, 50, 5285–5287.

1) **G. Kakavelakis**, E. Stratakis, E. Kymakis, Aluminum nanoparticles for efficient and stable organic photovoltaics, *RSC Adv.* 2013, 3, 16288.

Patent applications and invention disclosures

1) PCT/EP2020/076965, **G. Kakavelakis**, K. Dimos, C. O'Riada, L. G. Occhipinti, A. C. Ferrari. 'Perovskite Semiconductor Device'

Book Chapters

1) **G. Kakavelakis***, L. Gouda, Y. Tischler, I. Kaliakatsos and K. Petridis*, 2D Transition Metal Dichalcogenides for Solution-Processed Organic and Perovskite Solar Cells, In: Arul N., Nithya V. (eds) Two Dimensional Transition Metal Dichalcogenides. Springer, Singapore, 2019, 203-239 (*__corresponding author__).

Invited Talks at conferences

1) **G. Kakavelakis**, E. Alharbi, T. Baumaler, M. Graetzel, Plenary Invited Speaker at 3rd International conference in electronic engineering (EEITE 2022), information technology & education, Hellenic Mediterranean University, Chania, Crete, Greece 28-30 September 2022 (**Plenary Invited Talk**).

2) **G. Kakavelakis**, Fully printable perovskite photovoltaics with Carbon-based counter electrodes, Annual workshop on Function Materials for Emerging Technology (FMET – 2022) from 14th – 17th March 2022 (**Online Invited Talk**).

3) **G. Kakavelakis**, Perovskite solar cells based on layered materials, 2021, Halide Perovskites International Conference (2D-HAPES2021), 3-4 November (**Online Invited Talk**).

4) **G. Kakavelakis et al.,** Graphene-ink based current collectors for efficient and stable fully-printed perovskite solar cells, Graphene Week International Conference, 20-24 September 2021(**Online Invited Talk**).

5) **G. Kakavelakis**, Carbon-based electrodes for solution-processed halide perovskite solar cells, 2019 CDT 2D Conference, 1-4 July, Wyboston Lakes, UK (**Invited Talk**).

Contributed Talks at conferences

1) **G. Kakavelakis**, E. Alharbi, T. Baumeler, M. Graetzel, Novel device engineering strategies for printable photovoltaics, The 7th Ed. of the European Graphene Forum - EGF 2022, 26-28 October 2022, Athens, Greece (**Oral Presentation**).

2) **G. Kakavelakis**, K. Dimos, C. O' Riada, A.C. Ferrari, Highly conductive, low-temperature curable graphene counter electrodes for efficient and stable fully-printed perovskite solar cells, Graphene Week 2019, 23-27 September, Helsinki, Finland (**Oral Presentation**).

3) **G. Kakavelakis**, D. Konios, T. Maksudov, P. Tzourmpakis, M. Papachatzakis, C. Petridis, E. Kymakis, Graphene-related materials for efficient and stable organic and perovskite solar cells, Graphene Week 2017, 25-29 September, Athens, Greece (**Oral Presentation**).

4) **G. Kakavelakis,** E. Kymakis, Efficiency and Stability enhancement of Hysteresis-Free Planar Inverted Perovskite Solar Cells via the addition of metal nanoparticles in the Hole Transport Layer, Asia-Pacific International Conference on Hybrid and Organic Photovoltaics (AP-HOPV17), 3-4 February 2017, Yokohama, Japan (**Oral Presentation**).

5) **G. Kakavelakis**, D. Konios, T. Maksoudov, I. Paradisanos, C. Petridis, G. Kioseoglou, E. Stratakis, E. Kymakis, Graphene and other 2D inks as buffer layers in organic and perovskite solar cells, Organic and Perovskite Solar Cells Conference, 19-21 October 2016, Heraklion, Greece (**Oral Presentation**).

6) **G. Kakavelakis**, D. Konios, C. Petridis, E. Stratakis, E. Kymakis, Work function tuned solution processable graphene derivatives as buffer layers for high efficient organic and perovskite solar cells, Transparent Conductive Materials (TCM) 2016, 9-13 October, Chania, Greece (**Oral Presentation**).

7) **G. Kakavelakis**, D. Konios, C. Petridis, E. Stratakis, E. Kymakis, Work function tuned solution processable graphene derivatives as buffer layers for high efficient organic and perovskite solar cells, Hybrid and Organic Photovoltaics (HOPV16) Conference 2016, 28 June – 1 July, Swansea, Wales (**Oral Presentation**).

8) **G. Kakavelakis**, I. Vangelidis, A. Heuer-Jungemann, A. G. Kanaras, E. Lidorikis, E. Stratakis, E. Kymakis, Plasmonic Backscattering Effect in High Efficient Organic Photovoltaic Devices, New Trend in Solar Cells Conference 2016, 19-21 April 2016, Bratislava, Slovakia (**Oral Presentation**).

9) **G. Kakavelakis**, Miron Krassas, Naoum Vaenas, Emmanuel Stratakis, Emmanuel Kymakis, A Universal Strategy for efficiency enhancement of Organic Photovoltaic Devices via incorporation of Plasmonic metal Nanoparticles, 8th International Symposium on Flexible Organic Electronics (ISFOE), 6-9 July 2015, Thessaloniki, Greece (**Oral Presentation**).

10) **G. Kakavelakis**, M. Krassas, N. Vaenas, E. Stratakis, E. Kymakis, Plasmonic Organic Photovoltaic devices overcoming the critical barrier of 10% Power Conversion Efficiency, Hybrid and Organic Photovoltaics (HOPV15) Conference 2015, 10-13 May 2015, Rome, Italy (**Oral Presentation**).
11) **G. Kakavelakis**, D. Konios, K. Savva, C. Petridis, E. Stratakis, E. Kymakis, 'Work-function tuned Graphene oxide as a cathode/anode interfacial layer in organic photovoltaics with high efficiency and stability', 11th International Conference on Nanosciences & Nanotechnologies (NN14) 8-11 July 2014, Thessaloniki, Greece (**Oral Presentation**).

Posters presentations

1) **G. Kakavelakis**, T. Maksudov, P. Tzourmpakis, M. Papachatzakis, D. Konios, C. Petridis, E. Kymakis, Graphene-related materials for efficient and stable organic and perovskite solar cells and modules, Hybrid and Organic Photovoltaics (HOPV17) Conference 2017, 21-24 May, Lausanne, Switzerland (**Poster Presentation**).
2) **G. Kakavelakis**, E. Stratakis, E. Kymakis, Enhancement of Organic Photovoltaic Devices Performance by a Synergetic Plasmonic Effect of Al and Au Nanoparticles, Final Meeting of Cost Action MP0902 – COINAPO, 14-16 October, 2013, Heraklion, Greece (**Poster Presentation**).

Invited Lectures/Colloquia

1) Lecture at 2022 European Researchers' Night (organized under the frame of MSCA), House of Culture, 26 September 2022, Rethymnon, Greece.
Lecture Title: **Printed Photovoltaics: A solution for the energy and climatic crisis**
2) Colloquial talk at Electrical and Electronics Engineering Department of Surrey University, 2022, May, London, UK
Lecture Title: **Novel device engineering strategies for highly efficient ultra-low-cost solar photovoltaics**
3) Colloquial talk at Chemistry department of Imperial College London, 2022, May, London, UK
Lecture Title: **Novel device engineering strategies for highly efficient ultra-low-cost solar photovoltaics**
3) Colloquial talk at Technical University of Crete, Department of Electrical and Computer Engineering, 2022, April, Chania, Greece.
Lecture Title: **Novel device engineering strategies for highly efficient ultra-low-cost solar photovoltaics**
4) Colloquial talk at Materials Science and Engineering department of Ioannina, 2022, December, Greece.
Lecture Title: **Energy devices based on solution processed electrodes**
5) Colloquial talk at Chemical engineering department of National Technical University of Athens, 2021, December, Greece.
Lecture Title: **Energy devices based on solution processed electrodes**
6) Colloquial talk at Chemistry department of University of Crete, 2021, December, Greece.
Lecture Title: **Energy devices based on solution processed electrodes**
7) Colloquial talk at Chemistry department of National Technical University of Athens, 2021, November, Greece.
Lecture Title: **Energy devices based on solution processed electrodes**
8) Online School in layered materials and applications, Hellenic Mediterranean University, 2021, July, Greece.
Lecture Title: **Organic and Perovskite Layered Material Based Solar Cells**.
9) Colloquial talk at the Physics department of University of Patras, 2021, March, Greece.
Lecture Title: **Strategies to improve the performance and stability of solution processed photovoltaics**
10) Sci-Café Colloquial Talks, Hellenic Mediterranean University, 2021, February, Greece.
Lecture Title: **Carbon-Based Electrodes for Solution-Processed Solar Cells**

11) Seminar at Graphene CDT Advanced Technology Lectures, University of Cambridge, Department of Engineering, 2019, March, Cambridge, UK
Lecture title: **Interface Engineering for Solution-Processable Photovoltaics**
12) Seminar at Erasmus+, Electronics for the beyond the silicon era, 2018, July, Chania, Greece
Lecture title: **Graphene and 2D TMDs for Perovskite Solar Cells**
13) Seminar at Tampere University of Technology, Department of Chemistry and Bionegineering, 2018, February, Tampere, Finland
Lecture title: **Advanced interface engineering for solution-processable photovoltaics**
14) Seminar at Erasmus+, 3rd Erasmus Week on Modern Topics in Electronics, 2016, May, Chania, Greece
Lecture title: **Metal halide perovskite-based materials and solar cells**
15) Seminar at Erasmus+, Electronics for the beyond the silicon era, 2016, April, Sinaia, Romania
Lecture title: **Perovskite solar cells: An introduction**
16) Seminar at Organic Electronic and Applications (OREA) EU Project, 2015, December, Chania, Greece
Lecture title: **Advanced device engineering for organic photovoltaics**