

Faculty of Arts and Sciences  
Department of Chemistry

**2023 MAKHLOUF HADDADIN  
LECTURE**

# “MOLECULAR PHOTOVOLTAICS AND THE RISE OF PEROVSKITE SOLAR CELLS”

**Professor Michael Graetzel, EPFL**

September 19, 2023  
4:00 pm

Munib and Angela Masri Building,  
Jassim Al-Qatami Engineering  
Lecture Hall (ELH)



AMERICAN  
UNIVERSITY OF BEIRUT

FACULTY OF ARTS & SCIENCES  
Department of Chemistry

## PROF. MAKHLOUF J. HADDADIN



Professor Makhlof J. Haddadin was born in the beautiful village of Ma'in, Jordan, on March 21, 1935. He went to the Hussein College in Amman for high school, and was later awarded a full scholarship from the Jordanian Ministry of Education to study Chemistry at AUB. He received a B.Sc. in 1957 and continued at AUB as an MS student under the direction of the late Professor Costas Issidorides. He did his Ph.D. in Organic Chemistry with Prof. Alfred Hassner at the University of Colorado, Boulder. After graduating in 1962, Dr. Haddadin went to Harvard University for two years of Postdoctoral research under the direction of the late Professor Louis Fieser.

In 1965, Prof. Haddadin decided to return to his alma mater as an Assistant Professor of Chemistry, where he quickly climbed the academic and administrative ladders. In 1969, he was promoted to Associate Professor with Tenure, and he became a Professor in 1975. He served AUB in numerous important administrative positions, including vice president for academic affairs, acting Dean of Health Sciences, and acting President at some of the most testing times of AUB. Despite his busy time at AUB, Dr. Haddadin found time for distinguished Sabbatical research leaves at many prestigious places including University of Notre Dame, University of North Texas, and University of California at Davis.

Professor Haddadin has been especially celebrated for his achievements in the area of heterocyclic chemistry that resulted in the publication of more than 125 scholarly papers in prestigious international journals. A landmark event in Professor Haddadin's career was his co-discovery of the Beirut Reaction—a reaction that impacted the field of pharmaceutical chemistry and yielded 40 patents in numerous countries. His most recent contributions revolved around the “Davis-Beirut Reaction”, co-discovered with Professor Mark J. Kurth of the University of California at Davis. In 2018, Dr. Haddadin was the first faculty to hold the Bonnie and Costantine Issidorides Chair in Organic Chemistry and until his retirement. In addition to Chemistry, Dr. Haddadin was also known for his love and passion for Arabic Poetry. Dr. Haddadin retired from AUB in 2022 after 57 years of outstanding research, extraordinary services, mentoring and inspiring generations of students who currently hold important positions in academia and the chemical industries.

On September 21, 2022, Professor Makhlof Haddadin sadly passed away in his native Jordan. May he rest in peace.

### MAKHLouF HADDADIN ENDOWMENT

The Makhlof Haddadin Endowment was established by Prof. Bilal R. Kaafarani in February 2011. Since 2011, proceeds from the Endowment have been used to grant the Makhlof Haddadin Awards to distinguished graduating chemistry undergraduate and graduate students. As of 2015, the Endowment proceeds have been also used to fund an annual Makhlof Haddadin lectureship/symposium.

For more details: [www.aub.edu.lb/haddadin](http://www.aub.edu.lb/haddadin).

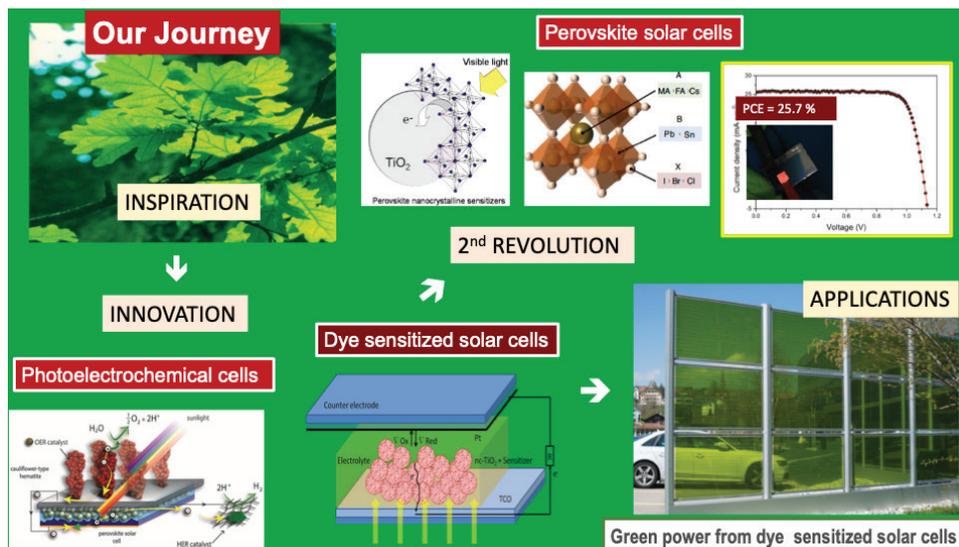
# Molecular Photovoltaics and the Rise of Perovskite Solar Cells

## MICHAEL GRAETZEL

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Michael Grätzel is a Professor at EPFL where he develops photosystems for the generation of electricity and chemical fuels from sunlight. Prof. Grätzel graduated from the Technical University Berlin and was a postdoctoral fellow at the University of Notre Dame before joining the EPFL faculty as a professor of physical chemistry. There, he started his groundbreaking investigations on colloidal semiconductors, which generated several new research fronts worldwide. Prof. Grätzel is well known for his discovery of mesoscopic dye sensitized solar cells, which in turn prompted the rise of perovskite solar cells, triggering a second revolution in photovoltaics. Prof. Grätzel's pioneering work was recognized by several awards including the Rank Prize, BBVA Foundation Frontiers of Knowledge Award in Basic Science, Millenium Technology Prize, Global Energy Prize, Marcel Benoist Prize, and Balzan Prize. He is a member of several learned societies and received 12 honorary doctor degrees from European and Asian Universities. His over 1,800 publications had a major impact on the photovoltaic field. A recent bibliometric ranking by Stanford University places Prof. Grätzel first amongst 100,000 world-wide leading scientists across all areas of science. According to the Web of Science (2022), he is currently the most highly cited chemist in the world.



### References

1. M. Grätzel et al. *Nature* **2023**, <https://doi.org/10.1038/s41586-022-05460-z>.
2. M. Grätzel et al. *Science* **2023**, 379, 288.

## **PREVIOUS SPEAKERS OF THE MAKHLOUF HADDADIN LECTURES**

### **2022 (MAKHLLOUF HADDADIN SYMPOSIUM)**

- » Professor Bruce A. Arndtsen, McGill University
- » Professor Prashant V. Kamat, University of Notre Dame
- » Professor Denis Liotta, Emory University
- » Professor Thomas E. Mallouk, University of Pennsylvania
- » Professor Teri W. Odom, Northwestern University
- » Professor Kirk S. Schanze, University of Texas at San Antonio
- » Professor Hanadi Sleiman, McGill University
- » Professor Luisa Torsi, Università degli Studi di Bari Aldo Moro
- » Professor Svetlana B. Tsogoeva, Friedrich-Alexander Universität

### **2019**

- » Professor Omar K. Farha, Northwestern University

### **2018**

- » Chemistry Nobel Laureate Sir Fraser Stoddart, Northwestern University

### **2017**

- » Professor M. G. Finn, Georgia Institute of Technology

### **2016 (MAKHLLOUF HADDADIN SYMPOSIUM)**

- » Professor Luisa De Cola, Université de Strasbourg
- » Professor Mark J. Kurth, University of California-Davis
- » Professor Seth R. Marder, Georgia Institute of Technology
- » Professor Gerald Meyer, University of North Carolina at Chapel Hill
- » Professor Paul Weiss, University of California, Los Angeles
- » Professor George M. Whitesides, Harvard University
- » Professor Samir Zard, Ecole Polytechnique

### **2015**

- » Professor Joseph W. Perry, Georgia Institute of Technology

