

# **Organic photovoltaics nguyen ucsb**





## Overview

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What does the Nguyen group do?

Research in the Nguyen Group focuses on organic electronic devices, such as photovoltaics, photodetectors, and electrochemical transistors.

What are the OECT projects in Nguyen's group?

OECT projects in Nguyen's group focus on three fronts: developing new materials for OECTs, investigating device physics of OECTs with new fabrication techniques and device structure, and demonstrate applications of OECTs in electronics and in chemical/biosensing. Some selected past and ongoing projects are:

How effective are organic solar cells based on non-fullerene acceptors?

Organic solar cells based on non-fullerene acceptors are now approaching impressive power conversion efficiencies of over 19% (ref. 1). While this breakthrough is encouraging, it is crucial to attain a deeper understanding of the underlying mechanisms governing these devices, in particular around charge generation.

What are the power conversion efficiencies of single-junction organic solar cells (OSC)?

The power conversion efficiencies (PCEs) of single-junction organic solar cells (OSC) have now reached over 18%. This rapid recent progress can be attributed to the development of new nonfullerene electron acceptors (NFAs) that are paired with suitable high performing polymer electron donors.

Are organic solar cells efficient?

Organic solar cells (OSCs) have recently shown a rapid improvement in their performance, bringing power conversion efficiencies to above 18%. However, the open-circuit voltage of OSCs remains low relative to their optical gap and this currently limits efficiency.



What is charge generation in organic photovoltaics?

Provided by the Springer Nature SharedIt content-sharing initiative Charge generation in organic photovoltaics hinges upon the frontier molecular orbital energies of organic semiconductors, yet their precise determination is not trivial.



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### Professor Thuc-Quyen Nguyen receives double honors for her ...

The society cited her "seminal contributions to the development of organic semiconducting materials and device physics of organic photovoltaics to mitigate climate change." The award ...

### [Yelim Choi , Nguyen Research Group](#)

Professor Thuc-Quyen Nguyen Office: CHEM 3122  
Phone: 805.893.4851 Fax: 805.893.4120 E-mail:  
quyen@chem.ucsb Mailing address Department  
of Chemistry & Biochemistry University of  
California, Santa Barbara Santa Barbara, CA  
93106-9510 Laboratory



### Thuc-Quyen Nguyen

Thuc-Quyen Nguyen's research focuses on organic electronic materials and devices, using a variety of techniques to understand their properties and performance. Applications of her work include organic photovoltaics, ...

### [Center for Polymers and Organic Solids](#)

Nguyen Group PSBN 2520C Optical field, especially fluorescent emitting materials and OLED applications. Research focused on the inverted non-fullerene organic photovoltaic using the PEDOT:PSS hole-transport layer fabricated in dried environment.



[Nora Schopp , Nguyen Research Group](#)

Professor Thuc-Quyen Nguyen Office: CHEM 3122  
Phone: 805.893.4851 Fax: 805.893.4120 E-mail:  
quyen@chem.ucsb Mailing address Department  
of Chemistry & Biochemistry University of  
California, Santa Barbara Santa Barbara, CA  
93106-9510 Laboratory



[Members , Nguyen Research Group](#)

Research Interest: Organic Semiconductor film characterization and functional applications of OECTs. Yelim Choi. Visiting Researcher. Stable and Stretchable Organic Photovoltaics, Thin ...



[Michael Heiber , Nguyen Research Group](#)

Professor Thuc-Quyen Nguyen Office: CHEM 3122  
Phone: 805.893.4851 Fax: 805.893.4120 E-mail:  
quyen@chem.ucsb Mailing address Department  
of Chemistry & Biochemistry University of  
California, Santa Barbara Santa Barbara, CA  
93106-9510 Laboratory





### Nguyen, Thuc-Quyen

The Nguyen Group conducts research on organic electronic devices, such as photovoltaics, light-emitting diodes, and field-effect transistors. We characterize devices and the organic, semiconducting materials utilized in these devices by a variety of electrical, optical, and structural measurements to elucidate the influence of chemical structure on the properties and ...



### Barrier to charge generation , Nature Energy

Charge generation in organic photovoltaics hinges upon the frontier molecular orbital energies of organic semiconductors, yet their precise determination is not trivial.

### UCSB pioneers a low-energy process for high-performance

Perovskite solar cell production also has the potential for a smaller carbon footprint than silicon photovoltaics, which require high temperatures and a cleanroom environment. That said, producing these cells involves high-temperature annealing and tricky post-treatment steps, significantly slowing fabrication and making it hard to incorporate them ...



### Kayla Nguyen , Materials Research Laboratory at UCSB: an NSF ...

Due to the low cost for energy conversion, organic photovoltaic have attracted much attention for research is done to improve the power conversion efficiency of for the thin film organic cell. The method interested for this project is vacuum deposition of organic thin films.



### National Academy of Inventors recognizes Professor ...

Nguyen has focused on creating organic photovoltaics (OPVs) that are more efficient, long-lived and environmentally friendly than conventional solar cells. "I am extremely grateful for the support that UCSB has given me to ...



### ?Thuc-Quyen Nguyen?

Professor of Chemistry and Biochemistry, UCSB - Cited by 39,707 - Organic electronics - organic solar cells - organic semiconductors - doping - organic photodetectors This "Cited by" count includes citations to the following articles in Scholar. The ones

### [Sangcheol Yoon , Nguyen Research Group](#)

Professor Thuc-Quyen Nguyen Office: CHEM 3122  
Phone: 805.893.4851 Fax: 805.893.4120 E-mail: quyen@chem.ucsb  
Mailing address Department of Chemistry & Biochemistry University of California, Santa Barbara Santa Barbara, CA 93106-9510 Laboratory



### Nguyen Research Group

Our current research interests are electronic properties of conjugated polyelectrolytes, interfaces in optoelectronic devices, charge generation and transport in organic semiconductors, new ...



Members , Nguyen Research Group

Stable and Stretchable Organic Photovoltaics, Thin film morphology and characterization of Semiconducting Materials, Interfacial Engineering of Optoelectronics. Christy Du 1st year Undergraduate student



Sam Mugiraneza , Nguyen Research Group

Professor Thuc-Quyen Nguyen Office: CHEM 3122  
Phone: 805.893.4851 Fax: 805.893.4120 E-mail: quyen@chem.ucsb Mailing address Department of Chemistry & Biochemistry University of California, Santa Barbara Santa Barbara, CA 93106-9510 Laboratory



**Professor Thuc-Quyen Nguyen receives double ...**

Nguyen's group makes organic photovoltaics using carbon-based materials processed from chemical solutions at room temperature. OPVs are 1,000 times thinner than silicon solar cells and can be made into different ...



**Thuc-Quyen Nguyen's research works , University of California, ...**

Thuc-Quyen Nguyen's 379 research works with 30,381 citations and 14,508 reads, including: High-Performance Wearable Organic Photodetectors by Molecular Design and Green Solvent Processing for





## (PDF) Understanding the Limitations of Organic Photovoltaics

Mar 24, 2023, Nora Schopp published Understanding the Limitations of Organic Photovoltaics , Find, University Potsdam-UCSB Mini-Symposium, online, 2021, Research Talk Center for Polymers and



## National Academy of Inventors recognizes Professor ...

Chemistry professor Thuc-Quyen Nguyen has been named a fellow of the National Academy of Inventors (NAI). Nguyen serves as the director of the Center for Polymers and Organic Solids, where she works to develop ...

### [Members , Nguyen Research Group](#)

Professor Thuc-Quyen Nguyen Office: CHEM 3122  
Phone: 805.893.4851 Fax: 805.893.4120 E-mail:  
quyen@chem.ucsb Mailing address Department  
of Chemistry & Biochemistry University of  
California, Santa Barbara Santa Barbara, CA  
93106-9510 Laboratory



## Thuc-Quyen Nguyen's research works , University of California, ...

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