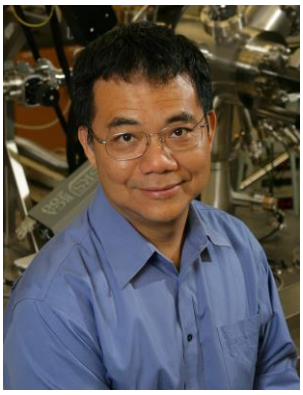
Prof. Yang Yang



The Carol and Lawrence E. Tannas Jr. Endowed Chair in Engineering

Department of Materials Science and Engineering, UCLA

PhD: Physics and Applied Physics, U-Mass., Lowell, 1992;

Advisors: Prof. Sukant Tripathy (deceased) and Jayant Kumar

MS.: Physics and Applied Physics, U-Mass., Lowell, 1988

Advisor: Prof. Y.Y. Teng (deceased)

BS.: Physics, National Cheng-Kung University, Taiwan, 1982

Prof. Yang's major research interests are in the solar energy and highly efficient electronic devices. He has more than 400 refereed-papers; more than 30 issued patents, and more than 200 plenary, keynote, and invited talks. He has accumulated of more than 110,000 citations and his ***H-Index is ~158*** *as February of 2021. He is a fellow of the American Association for the Advancement of Science, Materials Research Society, Royal Society of Chemistry, American Physical Society, Electromagnetic Academy, and SPIE, International Society for Optics and Photonics. Since 1997, he has supervised 45 PhDs and 55 postdocs to completion. Among them, 25 have become tenure-track or tenured faculty.*

Technical Achievements:

- *Demonstrated NREL Certified CIGS/Perovsite tandem solar cell of record 22.4% PCE solar cell. (2018)*
- *Demonstrated high carrier mobility of 50cm^2/vs on solution processible metal oxide transistor for OLED displays. (2016)*
- *Ultra-high specific power solar cell of 1200 kw/kg based on flexible perovskite solar cell. (2016)*
- *Demonstrated 19.3% PCE of perovskite solar cell. (2014) and 20.23% PCE (certified by NREL) of perovskite/CIGS solar cell.*
- *Since 2004, Yang has consistently promoted the organic solar cell efficiency from 4% (2005) to break the 10% technical (and commercialization) barrier (2012), and reached 11.5% in 2014. He has been pioneering the organic tandem solar cell technology in the past seven years.*
- *Invented the inverted polymer solar cell (2008) and inverted polymer tandem solar cell (2010). The inverted organic solar cell has become the industry standard in manufacture.*
- *Invented a high yield solution-process for producing large-area graphene flakes. (2007)*
- *Invented organic memory device by utilizing a nano-particle embedded polymer matrix. (2004)*
- *Invented organic vertical transistors for organic displays. (2001)*
- *Inventor of the interfacial layer which improves metal/organic interface, and enables Ohmic contact between the metal and organic interface. The concept of interfacial layer has been widely applied in OLED displays and solar cells. (1994)*
- *His technology has enabled five startups: Horizon PV (2014); Solarmer Energy Inc. (2006); Silanna (in Australia, 2007); ORFID Corp. (Los Angeles, 2004-2006); Coatue Technology (2001, Cambridge, Massachusetts, acquired by AMD in 2003). Currently, he is serving the Advisor to Solarmer Energy Inc. and Horizon PV Inc.*

Honors and Awards:

- *Highly Cited Researcher in three major fields: Materials Science, Chemistry, and Physics, Thomson Reuters (Only 23 world-wide elected, 2019).*
- *2019 Sustainable Energy Award. UK Royal Society of Chemistry.*
- *Yang's research has been selected as one of the feature research highlight of UCLA 100 Years Celebration. http://magazine.ucla.edu/features/100-ways-the-planet/index.html*
- *H-Index 158 (from Google Scholar), more than 400 refereed publications and more than 110,000 citations*
- *Ranked #3 on the World Top Ten Research Groups on the perovskite solar cell research (behind Oxford University and Univ. of Nebraska-Lincoln) by the Times Higher Education (THE) (2018) (*https://www.timeshighereducation.com/data-bites/top-universities-and-researchers-perovskite-solar-cell-research?from=timeline&isappinstalled=0)
- *Highly Cited Researcher in both Materials Science and Chemistry Categories (2013-2017) and Physics (2017) published by Thomason Reuters.*
- *Distinguished Alumni Award, National Cheng-Kung University, Taiwan, 2016.*
- Prof. Sukant Tripathy Endowed Memorial Lecture (2016)
- *'World's most influential scientific minds' by Thomason Reuters, 2016. (Only 19 scientists worldwide been selected.)*
- *Distinguished Achievement Award, Chinese-American Engineers and Scientists Association of Southern California (CESASC). (2016)*
- *Fellow of American Association for the Advancement of Science (AAAS) (2019)*
- *Fellow of American Physical Society (APS) (2015)*
- *Fellow of Materials Research Society (MRS) (2015)*
- *Fellow of Royal Society of Chemistry (FRSC) (2014)*
- *Fellow of the Electromagnetics (EM) Academy (2014)*
- *SPIE Fellow (2013)*
- *Second highest cited paper in Chemistry between 2005-2015, selected by the American Chemical Society. (2015)*
- *The Carol and Lawrence E. Tannas Jr. Endowed Chair in Engineering, July 2011*
- *Top Hot Researcher in 2010, Science Watch (published by Thomason Reuters), only 11 scientists were selected, including Andre Geim, the Nobel Prize Laureate in Physics, 2010.*
- *Highest cited Paper in 2010, Advanced Functional Materials*
- *Highest cited Paper in 2008-2010, Journal of American Chemical Society (JACS)*
- *IEEE Photovoltaic Expert, 2009.*
- *Semiconductor Research Association Invention Award 2008.*
- *NSF Career Award (1998)*

PROFESSIONAL EXPERIENCE

UCLA (University of California, Los Angeles) (1997-present)**:**

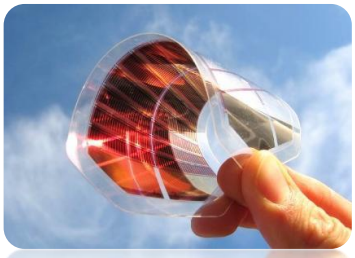
The Carol and Lawrence E. Tannas Jr. Endowed Chair in Engineering, since July 2011

Nano Renewable Energy Center, California Nano-System Institute, **Faculty Director**, (2007-present).

Materials Science and Engineering, **Professor (02-now), Asso. Prof. (98-02), Asst. Prof. (97-98)**

Our current research focuses on five major areas on electronic and optoelectronic materials and devices based on solution processible organic, inorganic and nano materials:

(a) Thin film solar cell based on Organic and Organic Hybrid materials. OPV device is promising technology for the next generation thin film PV cells. Yang's group emphasizes on fundamental understanding of the device physics, material science and processing, subsequently applying the knowledge in designing unique device architectures, novel donor/acceptor materials, and interfaces. Their tandem devices have reached efficiency of 10.6% PCE, this is the world record in the polymer solar cell technology. **Transparent OPV cells**: By utilizing the IR part of the solar spectrum, Yang's group has demonstrated a highly efficient and transparent OPV devices. The transparency reaches 70% in the visible, and the efficiency reaches more than 5% PCE in 2013, and currently reached to 9% PCE with 50% transmission in the visible range.



Flexible organic solar cell, a revolutionary technology. The OPV panel can be easily installed and used.

Technology transfer: (1) **Solarmer Energy Inc**., Los Angeles, California. In 2006, Solarmer Energy Inc. has established with license agreement with UCLA. (2006-present)

(b) Thin film solar cell based on CIGS: Cu-In-Ga-Se solar cell is one of the most promising solar cell with its direct bandgap and the absorption nearly perfect matches the solar spectrum. Our research focuses on the understanding the band structure of the CIGS and its relationship to the formation and composition of the CIGS nano-crystal, and the influence to the device characteristics. His group also emphasized on the interface engineering between each layer and working on the tandem solar cells.

(c) Thin film solar cell based on metal halide perovskite: Since 2013, Yang's group has initiated the perovskite solar cell research. Their research has focused on material, process and interface engineering based on fundamental understanding of material science and device physics. In particular, they developed new device architectures with improved interfaces for achieving record performance (Science, 2014) and stability (Nat. Nanotech., 2015). Also, understanding of physico-chemical interactions and defect physics has allowed them to improve crystal growth (Chem, 2017) and defect density of perovskite materials (Sci. Adv. 2017). As of 2018, the PCE of their perovskite solar cells has reached 21% (certified *stabilized* PCE of 19.77% by Newport). In addition, they combined their perovskite and CIGS solar cells to realize high efficiency perovskite/CIGS tandem solar cells. The CIGS/perovskite tandem solar cell demonstrated record PCE of 22.4% in 2018 (submitted to Science, under review).

Technology Transfer: **Horizon PV Inc**. is a startup located in Westwood California for the perovskite solar cell technology. (2014-present).

Metal oxide transistors. Metal oxide transistors: Since 2013, Yang's group has initiated the metal oxide transistor research for the application in displays, bio-sensors, and wearable electronics. In particular, solution-processed metal oxide transistors have reached the field-effect

mobility upto 50 cm2/Vs. It is the highest values of solution-processed metal oxide transistors at low temperature processing. It is ideal for the LCD and OLED applications. In parallel: new chemical formulation, eco-friendly, and large area processing of metal oxide-based materials and devices have also explored. Bio-sensing platforms of metal oxide transistors with an ultrathin semiconductor layer have been studied to realize high-sensitive and -selective sensor-based wearable applications. We have demonstrated DNA-based neurotransmitter detectors for the early diagnosis of degenerated brain disorders and non-invasive pH and glucose level sensors.

Technology transfer: (1) **Mo Technologies, Inc**. (2017-present)**,** Mo Technologies, Inc. is a startup company located in Pasadena California and their business is in the commercialization of metal oxide transistors for OLED displays. (2) **ORFID Corporation**, Los Angeles, CA., (2003 – 2009), ORFID was a start-up company focused on printable organic electronics and low-cost radio frequency identification tags.

graphene: By a unique solution processing method using hydrazine, they have created an easy solution processible graphene with large-area graphene sheets. Transparent electrode This is a joint research with Prof. Richard Kaner of the Chemistry Department, UCLA.

Westlake University, Hangzhou, Zhejiang province, China (July 2019- October 2020)

Guoqiang Chair Professor (国强讲习教授), Founding Dean of School of Engineering (工学院创院院长)

During the 14 months as the Founding Dean, Prof. Yang had been highly productive, and his major achievements are the follows:

- *Lay down the organization structure for the School of Engineering (SoE), forming several committees such that the major decisions of SoE are determined by the faculty members.*
- *Cultivated the culture, which emphasized on "Honesty and Integrity", for the School of Engineering.*
- *Forming the Faculty Search Committee, recruited 17 new faculty members from around the world.*
- *Double the number of female faculty.*
- *Forming the Multi-disciplinary Research Initiative Center (MRIC) to promote cross-disciplinary research between faculties from different schools in Westlake University.*
- *Forming the Center for the Next Generation Materials (NexGeM).*
- *Forming the Engineering Shared Facility to support faculty research.*
- *Forming Engineering Advisory Board (both domestic and international).*
- *Forming two PhD programs (博士点) on Materials and Microelectronics, respectively.*
- *Laboratory and office space arrangements for the new campus, scheduled to move in 2021.*
- *Organized Westlake International Symposium on Engineering (WISE) on July, 2019.*

Zhejiang-California Nano-system Institute, Zhejiang University, China

Center for Organic Opto-electronics Technology

Foreign Director and Chief Scientist, (2006 – 2008)

Center for organic opto-electronics technology is a newly established center under UCLA-Zhejiang University joint efforts in nanotechnology. Yang was serving as the founding director and chief scientist in this center.

UNIAX Corporation, (1992-1996), Staff Scientist.

(a) Reported the first observation of the dynamic p-n junction from polymer light-emitting electrochemical cells. **(b)** Researched on conductive plastic electrodes - high surface area polyaniline electrodes - used in the polymer light-emitting diodes; reported the highest LED quantum efficiency (>2.5%) on single layer devices by applying this unique electrode. **(c)** Developed blue-green polymer light-emitting electrochemical devices with 4% quantum efficiency and 12 lm/w power efficiency; a record [85] in its class kept for several years. **(d)** Invented a novel polymer thin film transistor, the Polymer Grid Triode, for high speed switches. In principle, the speed of the polymer triode can be >1MHz, which is very fast for the organic devices. **(e)** Developed organic transistors based on sexi-thiophenes on oriented meso-epitaxy PTFE film.

University of California-Riverside, (1991-1992) Postdoc in Chemistry (Prof. Bryan Kohler group)

(a) Investigation of NLO optical hole burning effect in polyene organic molecules at less than 4K temperature; (b) precision optics: design and setup the optics of an active single frequency Ti:Al_2O_3 laser (the third one in the US) for the spectroscopy research.

PROFESSIONAL SOCIETIES:

- Materials Research Society, MRS
- American Chemical Society, ACS
- American Physical Society, APS
- SPIE—The International Society for Optical Engineering, SPIE
- Society of Information Displays, SID
- Institute of Electrical and Electronics Engineers (IEEE)
- Faculty Director of SID UCLA Student Chapter.
- Organized two International Conferences on OLED (2001) and Organic Electronics (2013) at UCLA, and multiple symposiums on organic electronics for MRS and SPIE.

LIST of ISSUED PATENTS

1. A BI-FUNCTIONAL LEWIS BASE ADDITIVE FOR MICROSCOPIC HOMOGENEITY IN PEROVSKITE SOLAR CELLS. US 62/539,389, JUL. 31, 2018
2. 2D PEROVSKITE STABALIZED PHASE-PURE FORMAMIDINIUM PEROVSKITE SOLAR CELLS, US NO. 62/698,689 JUL. 16, 2018.
3. METAL-CHALCOGENIDE PHOTOVOLTAIC DEVICE WITH METAL-OXIDE NANOPARTICLE WINDOW LAYER, US 9,780,238, OCT. 3, 2017.
4. CONJUGATED POLYMERS FOR ELECTRONICS DEVICES, US 9663611, MAY 30, 2017.
5. SOLUTION PROCESSED NANOPARTICLE-NANOWIRE COMPOSITE FILM AS A TRANSPARENT CONDUCTOR FOR OPTO-ELECTRONIC DEVICES, US 9663611, JAN. 31, 2017.
6. SOLUTION PROCESS FOR IMPROVED NANOWIRE ELECTRODES AND DEVICES THAT USE THE ELECTRODES, US 9,460,999, OCT. 4, 2016.
7. SOLUTION PROCESSABLE MATERIAL FOR ELECTRONIC AND ELECTRO-OPTIC APPLICATIONS, US 9,295,133, MAR. 22, 2016. CHINA ZL200910160612.6; OCT. 3, 2012. INDIA.
8. INORGANIC SOLUTION AND SOLUTION PROCESS FOR ELECTRONIC AND ELECTRO-OPTIC DEVICES, US 9,502,600, NOV. 22, 2016.

9. SEMI-TRANSPARENT, TRANSPARENT, STACKED AND TOP-ILLUMINATED ORGANIC PHOTOVOLTAIC, US 8,993,998, MAR. 31, 2015
10. POLARIZING PHOTOVOLTAIC DEVICES AND APPLICATIONS IN LCD DISPLAYS AND TANDEM SOLAR CELLS, US 9,209,340, DEC. 8, 2015.
11. SOLUTION-PROCESSED INORGANIC PHOTO-VOLTAIC DEVICES AND METHODS OF PRODUCTION, US 9,190,543, NOV. 17, 2015.
12. HIGH-THROUGHPUT SOLUTION PROCESSING OF LARGE SCALE GRAPHENE AND DEVICE APPLICATIONS, US 9105403, AUG. 11, 2015.
13. COPOLYMERS OF ALKOXYTHIOPHENE, US NO. 8,530,574 , SEPTEMBER 26, 2013
14. ELECTRODE MODIFICATION USING STACKED LAYERS STRUCTURE FOR ACTIVE MATERIALS FOR PHOTOELECTRIC DEVICES AND DEVICES THAT USE THE MATERIALS, US 8,367,798; FEB. 5TH, 2013. CHINA ZL200980138171.8, JAN. 14, 2015. BRAZIL. INDIA.
15. POLYMER ELECTRONIC DEVICES BY ALL-SOLUTION PROCESS, US 8,044,389; OCT. 25TH, 2011.
16. POLYMER/ORGANIC ELECTRONIC DEVICES, US PATENT NO. 7,796,320; SETP. 14TH, 2010.
17. ORGANIC TRANSISTOR WITH DISPERSED METAL GATE ELECTRODE, US PATENT NO. 7,759,674; JULY 20TH, 2010. GERMANY 11 2005 002 274.9, MAR. 5, 2015. UNITED KINGDOM GB2433840, APR. 21, 2009. JAPAN 5000516, MAY 25, 2012.
18. WRITE-ONCE-READ-MANY PLASTIC MEMORY, US PATENT: US PATENT NO. 7,750,341; JULY 6TH, 2010.
19. ORGANIC ELECTRICAL BISTABLE DEVICES FABRICATED BY SOLUTION PROCESSING, US PATENT NO. 7,557,372; JULY 7TH, 2009.
20. AU NANOPARTICLES DOPED POLYANILINE NANOFIBER NON-VOLATILE MEMORY DEVICE7, US PATENT: 554,111; JUNE 30TH, 2009
21. THREE-TERMINAL ORGANIC MEMORY DEVICES, 7,544,966; JUNE 9TH, 2009.
22. NANOPARTICLE-POLYMER BISTABLE DEVICES, US 7,554,111, JUN. 30, 2009.
23. REWRITABLE NANO-SURFACE ORGANIC ELECTRICAL BISTABLE DEVICES, US PATENT: 7,482,621; JAN. 27TH, 2009.
24. BOTTOM INSULATING GATE VERTICAL ORGANIC TRANSISTER – BIGVOT; 7,476,893; JAN. 13TH, 2009.
25. ORGANIC ELECTRICAL BISTABLE DEVICES FABRICATED BY SOLUTION PROCESSING; US PATENT: 7,274,035; SETP. 25TH, 2007.
26. ORGANIC BISTABLE DEVICE AND ORGANIC MEMORY CELLS; US PATENT: 6,950,331; SETP. 27TH, 2005.
27. ORGANIC SEMICONDUCTOR DEVICES USING INKJET PRINTING TECHNOLOGY AND DEVICE AND SYSTEM EMPLOYING THE SAME, US PATENT 6,576,975, JUNE 10TH, 2003
28. PROCESS FOR FABRICATING ORGANIC SEMICONDUCTOR DEVICES USING INKJET PRINTING TECHNOLOGY AND DEVICE AND SYSTEM EMPLOYING THE SAME. US PATENT 6,566,153, MAY 20TH, 2003
29. POLYFLUORENES AS MATERIALS FOR PHOTOLUMINESCENCE AND ELECTRO-LUMINESCENCE; US PATENT NO. 5900372, MAY 4TH, 1999
30. BILAYER COMPOSITE ELECTRODE FOR DIODES; US PATENT NO. 5723873, MARCH 3RD, 1998
31. ORGANIC ELECTROLUMINESCENCE DEVICE. EP PATENT 842592A1, MAY 20TH, 1998
32. POLYMER GRID TRIODE, US PATENT NO. 5,563,424; OCTOBER 8TH, 1996
33. CONDUCTIVE LAYERED PRODUCT AND METHOD OF MANUFACTURING THE SAME-MATERIAL; US PATENT NO. 5556706, AUGUST 17TH, 1996.
34. CONDUCTIVE LAYERED PRODUCT AND METHOD OF MANUFACTURING THE SAME-DEVICES; US PATENT NO. 55546889, AUGUST 20TH, 1996

LIST OF PENDING PATENTS:

Polymer Solar Cells:

1. MULTIPLE DONOR/ACCEPTOR BULK HETEROJUNCTION SOLAR CELLS, UCLA Case Number: 2013-919-2 (2013)
2. TRANSPARENT ORGANIC SOLAR CELLS FOR AGRONOMIC APPLICATIONS, UCLA Case Number: 2013-515-2 (2013)
3. ORGANIC TANDEM PHOTOVOLTAIC DEVICES AND METHODS, UCLA Case Number: 2013-261-2 (2013)
4. INVERTED POLYMER TANDEM SOLAR CELL, 61/500,832, 06/24/2011
5. NOVEL POLYMER FOR POLYMER SOLAR CELLS, TRANSISTORS, AND SENSORS, 61/468,904, 03/29/2011
6. VERSATILE AND ROBUST INTERCONNECTION LAYER FOR TANDEM POLYMER SOLAR CELLS, 61/362,013, 7/07/2010
7. MULTI-SOURCE/COMPONENT SPRAY COATING FOR POLYMER SOLAR CELLS, 61/243,673, 09/18/2009
8. 3 TERMINAL PARALLEL CONNECTED ORGANIC TANDEM SOLAR CELL, 61/241,657, 09/11/2009
9. HIGHLY EFFICIENT TANDEM POLYMER PHOTOVOLTAIC CELLS, 61/221,404, 06/29/2009
10. STRUCTURES, SYNTHESIS AND APPLICATIONS OF A NEW FAMILY OF POLYMERIC PHOTOVOLTAIC MATERIALS, 13/056,871, 08/18/2009
11. PLASTIC SOLAR CELLS, 12/162,943,188, 02/16/2007
12. COPOLYMERS OF ALKYIOXYTHIOPHENE, 12/210,468, 3/16/2007
13. HOW TO FORM A UNIQUE POLYMER FILM FOR POLYMER SOLAR CELLS, 11/887,938, 04/06/2006.
14. EFFECTIVE ORGANIC SOLAR CELLS BASED ON TRIPLET MATERIALS, 11/921,236, 06/01/2006
15. HIGH PERFORMANCE POLYMER PHOTOVOLTAIC DEVICE, 10/510,661. 4/15/2003.

Memory and Metal Oxide TFT Devices:

1. METHOD OF DIRECT PATTERNING ON SOL-GEL INORGANIC FILMS AND FILM FORMATION AT LOW TEMPERATURE, UCLA Case No. 2014-641.
2. FORMATION METHOD OF METAL OXIDE SEMICONDUCTOR FILMS AND TRANSISTORS USING THE SOLUTION PROCESS, UCLA Case Number: 2014-298-1
3. LOW TEMPERATURE PROCESSED HIGH PERFORMANCE METAL OXIDE TRANSISTORS ON EARTH ABUNDANT ELEMENTS, UCLA Case Number: 2014-131-1
4. STACKABLE POLYMER MEMORY DEVICE, 12/324,301, 11/26/2008
5. DRIVING METHOD FOR SWITCHING DEVICE, 10/592,079, 5/11/2005

Inorganic Solar Cells:

1. BI-FUNCTIONAL LEWIS BASE ADDITIVE FOR MICROSCOPIC HOMOGENEITY IN PEROVSKITE SOLAR CELLS, UCLA Case Number: 2018-020-1 (2018)
2. EFFICIENT AND STABLE PEROVSKITE SOLAR CELLS WITH ALL SOLUTION PROCESSED METAL OXIDE TRANSPORTING LAYERS, UCLA Case Number: 2015-556-2 (2015)

3. TANDEM ORGANIC-INORGANIC PHOTOVOLTAIC DEVICES, UCLA Case Number: 2015-152-2 (2015)
4. PEROVSKITE-BASED ON OPTOELECTRONIC DEVICE EMPLOYING NON-DOPED SMALL MOLECULE HOLE TRANSPORT MATERIAL, UCLA Case Number: 2014-734-3 (2014)
5. TWO-STEP PROCESSING WITH VAPOR TREATMENT OF THIN FILMS OF ORGANIC-INORGANIC PEROVSKITE MATERIALS, UCLA Case Number: 2014-251-2 (2014)
6. LOW BANDGAP POLYMER AS THE HOLE-TRANSPORTING MATERIAL FOR PEROVSKITE PHOTOVOLTAIC DEVICE. UCLA Case Number: 2014-777-1 (2014)
7. WORK FUNCTION MODIFICATION ON ELECTRODE FOR ORGANIC-INORGANIC PEROVSKITE SOLAR CELL, UCLA Case Number: 2014-753-1 (2014)
8. ENHANCED RE-CONSTRUCTION PROCESS FOR ORGANIC-INORGANIC PEROVSKITE SOLAR CELL, UCLA Case Number: 2014-752-1 (2014)
9. LOW-TEMPERATURE SOLUTION-PROCESSED PEROVSKITE SOLAR CELLS WITH HIGH EFFICIENCY AND FLEXIBILITY, U.S. PROVISIONAL Application No. ~ 61/923,510. (2014)
10. SPIN-COUPLED SEMICONDUCTOR MATERIALS AND THEIR APPLICATIONS. U.S. Provisional Patent Application No. 61/908,999. (2013)
11. AQUEOUS PRECURSOR SYNTHESIS AND DEPOSITION OF SEMICONDUCTING METAL CHALCOGENIDE FILMS, UC Case # 2012-128-1, 2012
12. FORMATION OF BULK HETEROJUNCTION INORGANIC SOLAR CELLS, UCLA Case # 2010-770-1, 2010
13. ENHANCING THE EFFICIENCY OF LOW TEMPERATURE PROCESSED CulnSe2 PHOTOVOLTAIC DEVICES THROUGH CADMIUM ION DOPING, 2010-771-1, 2010
14. A SIMPLE ROUTE FOR GRAIN GROWTH IN SOLUTION-PROCESSED CRYSTALLINE SEMICONDUCTORS, 61/288,077, 12/18/2009
15. HIGH-THROUGHPUT SOLUTION PROCESSING OF SWCNT-GRAPHENE HYBRID TRANSPARENT CONDUCTOR, 61/129,698, 07/14/2008
16. A METHOD OF FORMING JUNCTION SOLAR CELL FROM METAL CHALCOGENIDE PRECURSORS, 60/996,885, 12/10/2007
17. SOLUTION-PROCESSED INORGANIC JUNCTION SOLAR CELL, 60/996,886, 12/10/2007

Others:

1. HIGH PERFORMANCE CHEMICAL AND BIO SENSORS USING METAL OXIDE SEMICONDUCTORS, UCLA Case Number: 2016-090-4 (2016)
2. AN ELECTRO-OPTIC DEVICE HAVING NANOWIRES INERCONNECTED INTO A NETWORK OF NANOWIRES, UCLA Case Number: 2012-792-3 (2012)
3. ACTIVE MATERIALS FOR ELECTRO-OPTIC DEVICES AND ELECTRO-OPTIC DEVICES, UCLA Case Number: 2011-558-3 (2011)
4. STRATEGIES FOR EFFICIENT, LARGE-AREA AND FLEXIBLE ORGANIC ELECTRONIC DEVICES - MODIFICATIONS OF TRANSPARENT ELECTRODE, GLASS SUBSTRATE..., 12/179,387, 07/24/2008
5. SURFACE TREATMENT FOR HIGH-EFFICIENCY POLYMER LIGHT-EMITTING DIODES, 60/991,603, 11/30/2007
6. APPLICATION OF CONDUCTING POLYMER AS ELECTRIC GLUE, 11/922,051, 6/30/2006
7. A GENERAL METHOD FOR ACHIEVING HIGH EFFICIENCY IN POLYMER LIGHT-EMITTING DIODES, 11/918,893, 4/21/2006
8. MULTIFUNCTIONAL ORGANIC THIN FILM PREPARED BY SINGLE SOURCE EVAPORATION, UC Case Number: 2003-222-2, US Provisional No. 10/542,791, 01/29/2004.

LIST OF PUBLICATIONS

Book:

*Yang Yang and Gang Li, Editors; Progress in High-Efficient Solution Process Organic Photovoltaic Devices – Fundamentals, Materials, Devices and Fabrication; Springer Topics in Applied Physics 130. (**2015**) (ISBN: 978-3-662-45508-1)*

Book Chapter and Journal Editing:

1. **Guest Editor**, Special Issue of the MRS Bulletin on Organic Electronic Materials and Devices, June 15, 1997.
2. Yang Yang, Shun-Chi Chang, Jayesh Bharathan, and Jie Liu, Organic/polymeric electroluminescent devices processed by hybrid ink-jet printing, Encyclopedia of Image, John Wiley and Sons, **2000**.
3. Yijian Shi, Jie Liu, and Yang Yang, Polymer Morphology and Device Performance in Polymer Electronic Devices; Book Chapter in Organic Electroluminescent Devices: A survey, Chapter 6, page 155-185, America Institute of Physics Press, Editor: J. Shinar, Spring-Verlag, October **2003**.
4. Yang Yang, Yijian Shi, Jie Liu, and Tzung-Fang Guo, and, "The Control of Morphology and the Morphological Dependence of Device Electrical and Optical Properties in Polymer Electronics", Chapter 13, pp. 307-354. on "*Electronic and Optical Properties of Conjugated Molecular Systems in Condensed Phases*", Editor, Dr. Shi Hotta. Research Signpost Publishing, India, **2004**.
5. Jie Liu, Yijian Shi, and Tzung-Fang Guo, Yang Yang, "The Electronic and Optical Properties in Conjugated Polymers and Devices, Editor", chapter 15 in "The Handbook of Electroluminescence Materials", Editor: D. R. Vij, Institute of Physics Publishing, U.K., **2004**.
6. Herb Gorokin and Yang Yang, **Guest Editor**, Special Issue of the MRS Bulletin on Solid State Nonvolatile Memory Devices, November, **2004**.
7. Yang Yang, Organic Nonvolatile Memories, book chapter in Materials for Information Technology - Devices, Interconnects and Packaging, ed. E. Zschech, C. Whelan, T. Mikolajick, Springer-Verlag, August 18th, **2005**, page 197-209.
8. Yang Yang and Fred Wudl, **Guest Editor,** Special Issue on "Interface in Organic Electronics", Advanced Materials, April 20th, **2009**, 21, page 1395 – 1530.
9. Juo-Hao Li, Jinsong Huang, and Yang Yang, "*Nanostructured Organic Light-Emitting Devices*" Chapter 14 in Nanotechnology for the Energy Challenge, Edited by Dr. Javier Garcia-Martinez; Wiley, **2009**. page 403 – 434.
10. Jinsong Huang, Gang Li, Juo-Hao Li, Li-Min Chen, and Yang Yang, "Transparent Solar Cells Based on Organic Polymers", Chapter 14 in "Transparent Electronics – from synthesis to applications". Editor: Antonio Facchetti and Tobin Marks, Wiley, **2010**, page 343-170.
11. Hsiang-Yu Chen, Zheng Xu, Gang Li, and Yang Yang, "Improving Polymer Solar Cell Through Efficient Solar Energy Harvesting", book chapter in "*WOLEDs and Organic Photovoltaics, Green Energy and Technology*", edited by V.W.W. Yam, Springer-Verlag Berlin Heidelberg, **2010**, page 199-237.

12. Y. Yang, Y. Yao and G. Li. "Routes toward High-Efficiency Polymer Solar Cells", p. 319-358., in "Organic Electronics: Materials, Processing, Devices and Applications", Ed. by Franky So, CRC Press, 2010.

Research Papers:

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420. Y. Yang, J.Y. Lee, J. Kumar and S.K. Tripathy, Steady state and fast transient photoconductivity of novel polydiacetylene single crystals, *Bull. Am. Phys. Soc.*, Vol.**35**(7), 1543 (**1990**)

On Material Characterization -- polycrystalline Si:

421. Y. Yang, S. Mil´shtein, J.T. Borenstein and H.I. Hanoka, "Deep levels in edge-defined, film grown silicon solar cells," *Appl. Phys. Lett.* Vol. 56(22), 2222 (**1990**).

422. S. Mil´shtein, J.T. Borenstein, H.I. Hanoka, and Y. Yang, "DLTS study of EFG solar cells," *21st IEEE Photovoltaic Proc.*, Vol. 1, 721 (**1990**).

On Nonlinear Optical Photorefractive Effects:

423. P.G. Schunemann, T.M. Pollak, Y. Yang, Y.Y. Teng and C. Wong, "Effects of feed materials and annealing atmosphere on the properties of photorefractive $BaTiO_3$ crystals," *J. Opt. Soc. Am. B*, Vol. 5, 1702, (**1988**).

424. Y. Yang, Y.Y. Teng, C. Wong, P.G. Schunemann and T.M. Pollak, Measurements of $BaTiO_3$ crystals by two beam coupling experiment, *Bull. Am. Phys. Soc.*, Vol.33(8), 1809 (**1988**).

LIST OF INVITED TALKS AND ORGANIZATION ACTIVITIES IN CONFERENCES

ORGANIZATION ACTIVITIES:

Conference Organizer

Society of Information Display (SID) 50th Year Anniversary Symposium, CNSI, UCLA, September 29th, 2012.

Society of Information Display (SID) Symposium on Organic Displays, Lighting, & Electronics

Newport Beach, February 4th, **2011**

International Symposium on Manufacturable Electronic Nano-technology (ISMEN)

UCLA California Nanosystem Institute, September 8-10, **2010**

International Conference Electroluminescence on Organic and Related Materials.

UCLA International Conference Center, September 5-8, **2001**.

- **Symposium Chair**

  Symp. on Emissive Displays, SPIE Photonic West Conference, San Jose, California, January, **2005**.

- **Symposium Chair**

  Symp. on Academic-Industrial Interaction on Conjugated Polymers, American Chemical Society Meeting, Hawaii, December 10-13, **2000**.

- **Symposium Chair**

  Symp. on Organic Electronic Materials and Device, MRS Fall Meeting, Boston, December, **2000**.

- **Symposium Chair**

  Symp. on Organic Electronic Materials and Device, MRS Fall Meeting, Boston, December, **1998**.

- **Symposium Chair**

  Symp. on Organic Electronic Materials and Devices, MRS Spring Meeting, S.F., 3/31 - 4/5, **1997**.

- **Symposium chair**

  Organic Optoelectronics Session, Electronic Material Conference, Santa Barbara, CA, 6/16- 22, **1996**.

- **Symposium Chair**

  Information Display Session, Soc. of Imaging Science and Technology, Minneapolis, 5/19-24, **1996**.

INVITED TALKS:

1. Yang Yang, Invited Speaker, "The Strategy for improving solar cell efficiency", Stanford University, Department Materials cience and Engineering, Colloquim, Stanford, USA. April 19, 2019.
2. Yang Yang, Invited Speaker, "High performance perovskite solar cell", MIT, Department of Mechanical Engineering, Department Seminar, Cambridge, USA. May 20, 2019.

3. Yang Yang, Invited Speaker, “High performance perovskite solar cell”, Boston College, Department of Chemistry, Department Seminar, Boston, USA. May 21, 2019.
4. Yang Yang, Keynote speaker, “Strategies toward high efficiency organic and perovskite solar cells”, IPS-22, Hefei, Anhui, China, July 29-August 2, 2018.
5. Yang Yang, Invited Speaker, “Light-Emitting Diodes Using Organo- and Inorgano-Metal Halide Perovskites”, Phoenix, Arizona, USA, April 2-6, 2018.
6. Yang Yang, Distinguished Invited Speaker, “Thin Film Photovoltaics Research at UCLA”, University Colloquium, Zhengzhou University, Zhengzhou, China, March 15, 2018.
7. Yang Yang, Plenary Speaker, “Next Generation Thin Film Photovoltaics”, Sustainable Energy Camp, Taipei, Taiwan, March 12, 2018.
8. Yang Yang, Distinguished Invited Speaker, “Recent Progress of Organic and Inorganic Solar Cell”, Kyushu University, Kyushu, Japan, January 31, 2018.
9. Yang Yang, Invited Talk, “Interface Engineering of Grain Boundary of Perovskite Solar Cells”, NanoGe Conference, Kyushu, Japan, January 28-31, 2018.
10. Yang Yang, Distinguished speaker, “Recent Progress of Organic and Inorganic Solar Cell”, University Colloquium, Chinese Ocean University, Qingdao, China, November 7th, 2017.
11. Yang Yang, Keynote Speaker, “Recent Progress of Peroskite Solar Cell Research at UCLA”, Advanced Functional Materials, UCLA, Los Angeles, California, USA, August 14-17, 2017.
12. Yang Yang, Keynote Speaker, “Strategies toward High Efficiency Organic and Perovskite Solar Cells”, STAR Symposium on Materials X Energy, Shanghai, China, June 21-23, 2017.
13. Yang Yang, Keynote Speaker, “Interface Engineering of Perovskite Solar Cells”, SISF Conference, Seoul, S. Korea, June 14-16th, 2017.
14. Yang Yang, Invited Speaker, “Recent Progress of Peroskite Solar Cell Research at UCLA”, MRS Spring Meeting, April 19th, 2017
15. Yang Yang, Invited Speaker, “Recent Progress of Peroskite Solar Cell Research at UCLA”, Colloquium, National Sun Yishen University, Taiwan, March 30, 2017.
16. Yang Yang, Invited Speaker, Colloquium, “Recent Progress of Peroskite Solar Cell Research at UCLA”, Lawrence Berkeley National Laboratory, Berkeley, Jan. 31, 2017.
17. Yang Yang, Invited Speaker, “My career path from NCKU to UCLA”, National Cheng Kung University, Taiwan, Nov. 6-9, 2016.
18. Yang Yang, Invited Talk, “Recent Progress of Peroskite Solar Cell Research at UCLA”, Perovskite Solar Cells and Optoelectronics Conference, Genoa, Sep. 26-28, 2016.
19. Yang Yang, Plenary Speaker, “Recent Progress of Peroskite Solar Cell Research at UCLA”, The 2nd International Symposium on Energy Conversion and Storage, Xiamen, June 15-17, 2016.
20. Yang Yang, Plenary Speaker, “Recent progress in perovskite solar cells”, Nature Conference on Renewable Energy, Wuhan, June 11-14, 2016.
21. Yang Yang, “Recent Progress of Peroskite Solar Cell Research at UCLA”, Nature Conference on Flexible Electronics-Challenges and Opportunities Conference, Plenary Speaker, Nanjing, June 6-8, 2016.
22. Yang Yang, Invited Talk, “Grand Challenges on Perovskite Solar Cell”, MRS Meeting, Phoenix, March 29, 2016.

23. Yang Yang, Plenary Speaker, “Recent Progress of Organic Solar Cell Research at UCLA”, 2016 International Conference on Organic Photovoltaic Materials and Devices, Hong Kong University of Science and Technology, Hong Kong, Mar. 5-7, 2016.
24. HK Conference TBRS Symposium, January 14 -15, Plenary Speaker, Perovskite Solar Cells.
25. Yang Yang, Colloquium Speaker, “Current status of perovskite thin film solar cells”, AFOSR Headquarter, Arlington, VA, Jan. 28th, 2016.
26. Yang Yang, Plenary Speaker, “Current and future prospects of the perovskite solar cells”, SPIE Fall Meeting, San Diego, August 10 – 14, 2015.
27. Yang Yang, Invited Speaker, “Organic and hybrid perovskite solar cells”, FPI Conference, University of Washington, July 21 – 23rd, 2015.
28. Yang Yang, Invited Speaker, “High Performance Hybrid Perovskite Thin Film Solar Cells”, PVSC Conference, New Orlean, June 15th – June 19th , 2015.
29. Yang Yang, Invited Speaker, ANSER Center’s annual Symposium, “Recent Progress on Organic-Inorganic Hybrid Perovskite-based Solar Cel at UCLA”, Northwestern University, April 16-17, 2015.
30. Yang Yang, Invited Speaker, “Recent Progress of Perovskite PV”, MRS Meeting, San Francisco, April 6-10th, 2015.
31. Yang Yang, APS Spring Meeting, “Recent Progress on Organic-Inorganic Hybrid Perovskite-based Solar Cell”, San Antonio, Texas, March 2nd, 2015.
32. Yang Yang, Colloquium Speaker, “Next Generation Thin Film Solar Cell”, National Chung Tung University, Taiwan, January 7th, 2015.
33. Yang Yang, Plenary Speaker, “High Performance Organic and Hybrid Thin Film Solar Cells”, ERC Conference in Hong Kung University, Nov. 13th, 2014.
34. Yang Yang, Invited Speaker, “High Performance Next Generation Thin Film Solar Cells”, Stanford Photonics Research Conference (SPRC), Palo Alto, California, September 15-17, 2014.
35. Yang Yang, Invited Speaker, “Interface Engineering and thin film growth of Perovskite Solar Cell”, Oxford Photovotaic Conference, Oxford, UK, September 11, 12, 2104.
36. Yang Yang, Invited Speaker, “Next Generation Thin Film Solar Cell”, UCLA-U. Boudreaux Joint Symposium, Boudreaux, France, June 9-11, 2014.
37. Yang Yang, Invited Speaker, “High Performance Organic and Hybrid Thin Film Solar Cell”, Hybrid and Organic PV Conference (HOPV), Lausanne, Switzerland, May 12-14, 2014.
38. Yang Yang, Invited Speaker, “High-Performance Transparent and Semi-Transparent Polymer Solar Cells”, MRS Spring, San Francisco, April 2014
39. Yang Yang, Plenary Speaker, “Progress and Strategy of High Performance OPV Devices”, Printed Electronics Conference, Hong Kong, December 9 – 12, 2013
40. Yang Yang, Plenary Speaker, “High-Performance Transparent and Semi-Transparent Polymer Solar Cells”, PVSEC conference, Taipei, Taiwan, October 28 – November 1st, 2013.
41. Yang Yang, Plenary Speaker, “High-Performance Transparent and Semi-Transparent Polymer Solar Cells”, Academic Sinica, October 25, 2013.
42. Yang Yang, Plenary Speaker, “Achieving High Performance Organic Photovoltaic Cells”, LOPE Conference, Munich, Germany, June 10-12, 2013.

43. Yang, Y., Plenary Speaker, “Strategies of achieving high performance OPV devices”, International Conference on Nanophotonics (ICNP 2013), Hong Kong, May 19, to May 23, 2013

44. Yang, Y., “Current Status of Organic Thin Film Solar Cells”, Department of Chemistry Colloquium, University of Hong Kong, May 22nd, 2013,

45. Yang, Y., “Plasmonic Effect on OPV Devices: The Bulk and Interface Effects”, Spring MRS, San Francisco, April 1-5, 2013.

46. Yang, Y., “CIGS Thin Film Solar Cell”, IBM Watson Center, Yorktown, New York, January 23rd, 2013.

47. Yang, Y., “Achieving High Performance Polymer Solar Cells”, Fall MRS, Boston, November 25-30, 2012.

48. Yang, Y. Plenary Speaker, “Breaking 10% efficiency barrier of organic photovoltaic cells”; Global Photovoltaic Conference, Busan, Korea, Nov. 19 -20, 2012.

49. Yang, Y., “Organic Solar Cells, its current status and future outlook”; Symposium Recent Development in Nanomaterials: Structures, Dynamics & Applications, Taipei, Taiwan; October 4-5, 2012.

50. Yang, Y., Keynote Speech, PV_SEC, “Current Status and Outlook of Organic Photovoltaics”, Frankfort, Germany, September 24-28, 2012

51. Yang, Y., Plenary Speaker, “Thin film solar cell research in UCLA”, Renewable Energy Workshop in Peking University, Beijing, China, Sept. 17-18, 2012,

52. Yang, Y., (1) “Plasmonic polymer tandem solar cell”, (2) “Plastic solar cells: Breaking the 10% commercialization barrier”, (3) “Recent progress in polymer solar cells and tandem polymer solar cells”, ACS, Philadelphia, August 19-23, 2012. (August 2012)

53. Yang, Y., Plenary Speech, “Plastic Solar Cells”, SPIE, San Diego, August 12-16, 2012. (August 2012)

54. Yang, Y., “Plastic Solar Cells: Breaking the 10% Commercialization Barrier”, ICSM, Atlanta, July 8-13, 2012. (July 2012)

55. Yang, Y., “Achieving High Performance Organic Tandem Solar Cells”, Symposium on Organic Electronics, Tokyo, Japan, May 8-10, 2012. (May 2012)

56. Yang, Y., “Organic Photovoltaic Devices and its Recent Progress”, ACS, San Diego, March 25-29, 2012. (March 2012)

57. Yang, Y., “High Performance Polymer Tandem Solar Cells”, UF MSE Seminar, Florida, February 22, 2012. (February 2012)

58. Yang, Y., “Polymer Tandem Solar Cell”, UC Santa Barbara seminar, Santa Barbara, Janunary 8, 2012. (Janunary 2012)

59. Yang, Y., “Solution-processed CuInSe2 Thin-film Solar cell”, MRS, Boston, November 28-December 2, 2012. (November 2011)

60. Yang, Y., “Polymer Electronics and its Applications”, Organic Electronics Symposium, Yamagata University, September 27- October 1, 2011. (September 2011)

61. Yang, Y., “Organic Photovoltaic Devices and Recent Progress”, Bordeaux, France, September 11-14, 2011. (September 2011)

62. Yang, Y., “High Performance Organic/Polymeric Tandem Solar Cells”, MRS Organic Microelectronics, San Francisco, July 18-20, 2011. (July 2011)

63. Yang, Y., "Recent Progress in Organic Photovoltaic Devices", Enrico Femi Colloquium at LENS, Italy, June 17, 2011. (June 2011)

64. MRS Spring Meeting, "Achieving high performance polymer tandem solar cell", San Francisco, April 25-29, 2011.

65. ACS Spring Meeting, "Novel Inverted Polymers Tandem Solar Cells", Anaheim, California, USA, March 28 – April 1, 2011

66. University of Florida, Department of Materials Science Colloquium, "Organic Electronics", Feb. 15, 2011.

67. Discovery Lecture, Oak Ridge National Laboratory, "High performance organic and inorganic thin film solar cell via solution process", Jan. 20, 2011.

68. Sukant Triphaty Memorial Symposium at U-Mass Lowell, "Recent Progress of Thin Film Solar Cells at UCLA", Lowell, Massachusetts, Dec. 3rd, 2010.

69. Challenges in the Development of Solar Energy: Joint Iranian/US Workshop; "Organic thin film solar cells – recent progress", UC-Irvine, Irvine, California, Nov. 10th – 12th, 2010. (This event is organized by the US State Department and DoE)

70. SPIE Photonic West Meeting, Plenary Talk, "Polymer Tandem Solar Cells", August 1-6, 2010, San Diego.

71. ICSM (International Conference on Synthetic Metals), Keynote Speech, Highly Efficient 2-T and 3-T tandem polymer solar cells, Kyoto, Japan, July 4th- 9th, 2010.

72. MRS Spring Meeting, Highly Efficient Single and Tandem Polymer Solar Cells, San Francisco, California, USA, April. 4-9, 2010.

73. ACS Spring Meeting, Novel Polymers for Organic Solar Cells, , San Francisco, California, USA, March 21 – 26, 2010.

74. APS Spring Meeting, Recent Progress of polymer Solar Cell, Portland, Oregon, USA, March 14 – 1, 2010.

75. MRS Fall Meeting, Graphene Composite Electrode for Electronics Applications, Nov. 29- - Dec. 4th, 2009, Boston, Massachusetts, USA.

76. MRS Fall Meeting, High Performance Polymer Solar cell in single layer and tandem structure, Nov. 29- - Dec. 4th, 2009, Boston, Massachusetts, USA.

77. The 19th International Photovoltaic Science and Engineering Conference and Exhibition (PVSEC-19), "Achieving high performance polymer solar cells", November 9-13th, 2009.

78. 2009 Taiwanese American Science and Technology Conference at Hilton in Costa Mesa, "The Progress of polymer and CIGS Solar Cell at UCLA", October 3, 2009.

79. LANL Colloquium, "Thin film solar cells", LANL, Sept. 28, 29, 2009.

80. American Chemical Society Meeting, Washington DC, "Polymer Solar Cells", Aug. 16th – 21st, 2009.

81. American Chemical Society Meeting, Washington DC, "Development of semi-transparent high efficiency polymer solar cell materials", Aug. 16th – 21st, 2009.

82. 4th International Symposium on Next Generation Non Volatile Memory Technology for Terabit memory, "Recent Progress of Memory Research at UCLA", July 24th, Hanyang University, Korea

83. Excited State Processes in Electronic and Bio Nanomaterials, "Recent Progress on Polymer Solar Cells at UCLA", Santa Fe, NM, June 29 - July 2, 2009.

84. Society of Vacuum Coater annual Meeting, "New Materials for Polymer Solar Cells", May 10-15, 2009

85. MRS Spring Meeting, "3-D Polymer Photovoltaic Cells", San Francisco, April 12-17, 2009.

86. MRS Spring Meeting, "Recent progress on nonvolatile memory at UCLA Devices", San Francisco, April 12-17, 2009.

87. ACS Modification of nanomorphology in polymer: fullerene blends-route towards high efficiency polymer solar cells", Salt Lake City, USA, March 22-27, 2009.

88. The WOLEDs and Organic Photovoltaics Workshop, "High efficiency polymer solar cells through efficient light harvesting", Hong Kong, January 8-10, 2009.

89. International Display Research Conference (IDRC), "Vertical Transistor for OLED Displays", Orlando, Florida, Nov. 3-6, 2008.

90. Eighth International Symposium on Advanced Fluid Information and Transdisciplinary Fluid Integration (AFI/TFI-2008), "High Performance Organic Photovoltaic Materials and Devices", Tohoku University, Sendai, Japan, on the 19th-20th of December, **2008**.

91. International Symposium on Materials for Enabling Nanodevices, "Soft Electronics, Its current status and future perspective", September 3-5, **2008**; National Cheng-Kung University, Tainan, Taiwan.

92. The 3'rd International Symposium on Next Generation Non-volatile Memory Technology for terabit memory, "Stackable Resistive Memory Device Using Photo Cross-linkable Copolymer", August 29, 2008.

93. **SPIE Optics+Photonics Conference**, "Solution processed organic light-emitting diodes with improved cathode interfacial structure", San Diego, August 10 – 14, **2008**.

94. **US-Japan POLYMAT 2008,** "High Performance Polymer Solar Cells," August-10-13, **2008**, Ventura Beach, CA.

95. **42nd World Polymer Congress ("Macro 2008"),** "Efficient Polymer Inverted Solar Cell", Taipei, Taiwan, June 29 - July 4, **2008**.

96. **OSA** Solar Energy: New Materials and Nanostructured Devices for High Efficiency, "High Performance Organic Optoelectronic Devices based on Nanotechnology", Stanford University, June 24-25, **2008**.

97. **MRS Spring Meeting**, 2008**,** Nanoscale Phase Separation in Polymer Solar Cells and Semi-transparent Polymer Solar Cells Fabricated by Lamination Process, San Francisco, March 23-28, **2008**.

98. **First GCOE International Symposium on Electronic Devices Innovation (EDIS2008),** "Stackable Resistive Memory Device Using Photo Cross-linkable Copolymer", Osaka University, Jan. 21, **2008**.

99. **MRS Fall meeting**, 2007; "Solvent Annealing Effect in Plastic Solar Cells", Boston, Nov. 26-30th, **2007**.

100. **SPIE Conference**,Plastic Bulk Heterojunction Solar Cell and NIR Photodetector, San Diego, August 26 – 31, **2007**.

101. **2nd International symposium on the next generation NVM devices,** "Recent progress on polymer nonvolatile memory in UCLA", Seoul, South Korea, June 1, 2007.

102. **Photovoltaics Summit 2007 by IntertechPira**, Polymer Solar Cells and Their Recent Progress, June 18-20, 2007 – Long Beach, CA USA

103. **IntertechPira Organic Photovoltaics 2007 Conference,** "High Performance Polymer Solar Cells", , on May 1 – 2, 2007 in Baltimore, MD.

104. **2007 MRS Spring Meeting**, "Organic and bio-based nonvolatile based memory devices", San Francisco, April 9th - April 13th, **2007**.

105. **2007 ACS Spring Annual Meeting**, "Nano-scale interface engineering and polymer memory device", Chicago, March 28th, **2007**.

106. **2007 APS Annual Meeting**, "Organic electrical bistable devices and applications as electronic digital memory", Denver, Colorado, March 6th, **2007**.

107. **Chemistry Colloquium, Rice University**, "High performance organic electronic devices based on nano-scale engineering", March 1st, **2007**.

108. **2006 SEMI Nano-Forum,** 10/31/06 – 11/02/06. San Jose, California, USA, "Organic electronics-from transistors, didplays, memory to energy harvesting".

109. **The 7th Organic Solid Conference,** October 22-25, 2006, Su-Zhou, China, "Recent Progress in Polymer Electronics".

110. **Society of Polymer Science in Japanese, Symposium on Organic Electroluminescence**, October 20th, 2006, Tokyo Japan, "High Performance Polymer LEDs".

111. **Department Colloquium in Electrical Engineering Dept., UCSD, La Jolla,** California, USA, October 13th, 2006, "Polymer electronics for energy harvesting and lighting".

112. **ACS/IEEE/MRS 2nd Annual Organic Microelectronics Workshop,** July 9-12, 2006, Toronto, Canada. Title: "Efficient organic/polymer solar cells"**.**

113. **Samsung Advanced Institute of Technology (SAIT)**, Seoul, Korea, June 16, 2006; "Polymer light-emitting diodes".

114. **Advanced Solar Energy Solutions for the Warfighter Workshop, May 18-19, 2006, Majestic Beach Resort, Panama City Beach, Florida; "Efficient Polymer Solar Cells".**

115. **MRS Spring Meeting, Symp. G. Science and Technology of Nonvolatile Memories,** April 17-21, 2006, San Francisco, California, USA, "High performance nonvolatile polymer memory devices"

116. **MRS Spring Meeting, O. Hybrid Organic/Inorganic/Metallic Electronic and Optical Devices,** April 17-21, 2006, San Francisco, California, USA, "Plastic Solar Cells-An Overview Research at UCLA".

117. **MRS Spring Meeting, Sym. L. Materials for Next-Generation Display Systems,** April 17-21, 2006, San Francisco, California, USA, "Ultra-high efficiency polymer LEDs."

118. **ITRS ERD Workshop on Emerging Research Memory Devices** in Maastricht, The Netherlands, on Tuesday, April 4, 2006. "Organic Nonvolatile Memory Devices and Their Future perspectives".

119. **2006 SEMICON, Non-Volatile Memory Device Technology Symposium**, Seoul, Korea, February 8-10, 2006 Seoul Korea, title "High performance organic/polymeric memory devices".

120. **HRL Colloquium,** January 19th, 2006, title "Polymer electronic materials and devices".

121. **Invited seminar talk in Applied Materials**. January 9th, 2006, title: "Polymer solar cells".

122. **"Polymer Materials for Microelectronics and Photonics"** Maui Westin Hotel in Hawaii from December 11 to 14, 2005. Title "Polymer/nano particle composite for high performance electronic devices".

123. **2nd International Workshop on Polymer/Metal Nanocomposites, 2005,** Institute of Chemistry, GKSS Research Centre, Geesthacht, Germany, Polymer/Metal Nanocomposites as the next generation electronic digital memory devices". Sept. 26-27, 2005.

124. **30th memorial conference of Japan society for the Promotion of Science, Chitose, Hokkaido, Japan,** Sept 2 and 3rd. High performance polymer electronic devices - solar cells, memories, and LEDs

125. **2005 Gordon Research Conference on the Chemistry of Electronic Materials,** Connecticut College in New London, CT, 17 July to 22 July, 2005. High performance organic electronic devices: memory, solar cells, and LEDs.

126. The Physics and Chemistry of Switching in Condensed Matter Workshop, April 1 & 2, 2005, San Francisco, CA, USA. "Organic and polymeric nonvolatile memory devices"

127. **The 5th International Conference on Electroluminescence of Molecular Materials and Related Phenomena,** Jan. 17 – 21, Phoenix Az., Organic Thin Film Switching and Memory Devices.

128. **MRS Fall Meeting, December 28th – Dec. 3rd, 2004, Boston,** "Organic thin film nonvolatile memory", December 2nd, 2004.

129. **Chemistry Department, University of Pennsylvania. Oct. 16th, 2004.** Organic memory devices.

130. **ICSM 2004, June 28th – July 2nd 2004**, Wollongong, Australia, "High performance organic/polymeric memory devices",

131. **Materials Research Society Spring Meeting,** April 12th – 16th, **2004**, San Francisco, California; "Toward all organic component circuits-from diodes to memory devices".

132. **Asia Society of Information Display**, "Ultra-high efficiency polymer light-emitting diodes". February 2004, Najing, China.

133. **Sukant Tripathy Memorial Symposium,** December 5th, Lowell Massachusetts, "Recent progress on organic electronics." (2003)

134. **Materials Research Society Fall Meeting,** December 1st -5th, **2003**, Boston, Massachusetts; "High Performance Organic Memory Devices".

135. **IBM Almaden Research Center, Colloquium,** "High performance organic bistable and memory devices", November 14th, 2003.

136. **The 6th Symposium on Electronic Processes in Organic Solids, Molecular Opto-electronic Materials, and related Phenomena", October 16th- 21st, 2003, Wuhan, China.** Title: "Recent progress in flexible electronics at UCLA".

137. **Rochester University, Department of Colloquium Physics Department,** "High performance organic bistable and memory devices"

138. **Cornell University, Department of Materials Science and Engineering,** September 25, 2003, "High performance organic bistable and memory devices".

139. **Organic Light-Emitting Device Workshop 2003, September 1-3, 2003 Hong Kong. Title:** "Polymer morphology and the performance of polymer LEDs".

140. International Conference on Electroluminescence 4, Sept. 26-29, 2003, Cheju Island, Korea. Title: "Organic alloy and the formation of organic LEDs"

141. **Dow Corning Company Colloquium, Midland, May 4th, 2003.** Title: Recent progress on flexible electronics.

142. **Material Research Society Spring Meeting, San Francisco, April, 2003.** Title: Organic bistable and memory device"

143. **Second International Conference on Molecular Electronics and Bioelectronics (M&BE2),** Tokyo, Japan, March 5-7, **2003**. Title" Organic/metal interface formation and interface engineering"

144. **International Display Manufacture Conference, Feb. 18-21, 2003,** Taipei, Taiwan. Title" Polymer LEDs and their recent progress".

145. **International Electron Devices and Materials Symposia, December 20 –21, 2002, Taipei, Taiwan,** Title: Organic elecronics.

146. **MRS Fall Meeting at Boston, December 1st – 6th, 2002**; Title: Metal/organic interface engineering.

147. **Solid State Devices and Materials Conference, Nagoya, Japan, Sept. 17th – 19th, 2002;** Title: High Performance Organic Nonvolatile Memory Device----a Direct Challenge to the Si Technology.

148. **American Chemical Society, August 18th – 23rd, 2002, Boston,** Title: Organic memory device.

149. **SPIE in Seattle, July 7 – 12th, 2002;** Title: Organic bistable light-emitting devices.

150. **International Conference on Synthetic Metals (ICSM), Shanghai, China, June 30 – July 5, 2002,** title: Organic electronic memory - a new direction of organic electronic devices.

151. **MRS Spring Meeting, San Francisco, April 1st – 5th, 2002,** Organic bistable device and non-volatile memory cell.

152. **The 1st European Conference on Organic Electronics and Related Phenomena - ECOER'1" to be held in between 18th to 21st November 2001 at Potsdam University.** High Performance Organic Memory Cells.

153. **American Chemical Society National Meeting in Chicago, August 26-30, 2001, Symposium "Macromolecular Assemblies for Optical and Electronic Applications",** High performance organic bistable device and memory cells.

154. **1st Organic Optoelectronic Materials Program of the Electrochemical Society in San Francisco, CA, September 2 - 7, 2001.**, Organic bistable device and memory cells.

155. **SPIE Annual Meeting at San Diego; July 29 – August 1, 2001.** High performance Polymer Light-Emitting Diodes formed by a low temperature lamination process.

156. **Materials Research Society Spring Meeting, April 16-20, 2001, San Francisco,** High Performance Organic Memory.

157. **10th International Workshop on Inorganic and Organic EL, December 4-7, 2000, Hamamasu, Japan;** High performance flexible polymer LEDs.

158. **The Sixth International Conference on the Science and Technology of Display Phosphors, November 6 – 8, 2000, San Diego, California,** High performance flexible polymer LEDs.

159. **First International Display Manufacture Conference, Sept. 5-7, 2000, Seoul, Korea;** Pyramid-Shape Pixels for Full Color Organic Emissive Displays.

160. **7th International Seminar on the Technology of Inherently Conductive Polymers, June 5-8, 2000, Napa Valley,** Polymer processing and device performance of polymer LEDs.

161. **Materials Research Society Spring Meeting, Electrical Active Polymer, April 24-28, 2000, San Francisco**, How To Make Good Polymer LEDS.

162. **American Chemical Society Meeting, Electrical Active Polymer, March 26 – 30, 2000, San Francisco.,** Polymer processing and polymer device performance.

163. **SID Taiwan Annual Meeting, March 9th, 2000, Taiwan;** Polymer processing and LED device performance.

164. **The Fifth International Conference on the Science and Technology of Display Phosphors, November 7 – 9, 1999, San Diego, California,** Polymer morphology and device performance.

165. **Departmental Seminar, EECS, UC-Berkeley, Sept. 17, 1999, Berkeley, California;** Polymer Semiconductors and polymer photonic devices.

166. **American Chemical Society Annual Meeting, Polymers for Displays, August, 1999, New Orleans, Louisiana,** Non-solid state polymer light-emitting devices.

167. **International Conference of Advanced Polymers, July 26-29, 1999, Yamagata, Japan.** Multi-color polymer solution light-emitting devices.

168. **SPIE Symposium on Organic Light-Emitting Materials and Devices III; July 19-23, 1999, Denver, Colorado.** Polymer Solution Light-Emitting Devices.

169. **Asia Pacific Organic Electroluminescence Materials and Device Conference, June 8-11, 1999, Hong Kong,** Polymer Solution Light-emitting Devices.

170. **Photonic Polymer Symposium, June 4, 1999, University of Massachusetts-Lowell, Lowell.** From Photomic Polymers to Polymer Photonics.

171. **International Conference of Electroluminescence (ICEL-2), May 12-15, 1999, Sheffield, UK.** Polymer Solution Light-Emitting devices.

172. **Symposium on Small Molecule & polymer organic light-emitting devices; April 26-27, 1999, Coronado, California.** Highly transparent polymer light-emitting device.

173. **SID 9th International Workshop on Inorganic and Organic Electroluminescence; Sept. 14-17, 1998, Bend City, Oregon.** Polymer EL devices processed by inkjet printing.

174. **SPIE Symposium on Organic Light-Emitting Materials and Devices II; 19-24, July, 1998, San Diego, California.** Inkjet printing and its application to polymer LEDs.

175. **Miyazaki International Symposium on Optical and Electrical Properties of Organic Materials. June 23 – 24, 1998**, **Tokyo Japan.** Polymer/metal interfaces and the performance of polymer LEDs.

176. **Materials Research Society Spring Meeting, April 13-17, 1998, San Francisco,** Polymer light-emitting logos.

177. **American Chemical Society Meeting, Organic Materials and Devices, Dallas, Texas, March, 1998,** Ionic Polarized Polymer Light-Emitting Diodes.

178. **SPIE Photonics West Conference, San Jose, January, 1998,** Recent Progress on Conjugated Polymer LEDs.

179. **Solid State Device and Material Conference, Sept. 16-19, 1997, Hamamatsu, Japan.** Efficieny blue light-emiting device from conjugated polymers

180. **American Chemical Society National Meeting, Organic Materials and Devices in Display Technology, San Francisco, April 13-17, 1997.** Efficient Blue Polymer Light-Emitting Devices

181. **MRS Spring Meeting, Symposium on Organic Electronic Materials and Devices, San Francisco, March 31 - April 5, 1997**. Polyaniline Electrodes and the Performance of Polymer LEDs.

182. **SPIE Photonics West Conference, Light-Emitting Diodes: Research, Manufacturing, and Applications, San Jose, February 16-21, 1997.**A Review of Recent Progress on Polymer LIght-Emitting Electrochemical Cells.

183. **International Symposium on Polymers for Electronic and Photonic Applications, University of Connecticut, October 22 - 23, 1996.** Polymer Grid Triodes.

184. **Gordon Research Conference - Electron Processes in Organic Materials, Proctor Academy, Andover, New Hampshire, July 1996.** Polymer Light-Emitting Electrochemical Cells.

185. **IEEE Device Research Conference (DRC), Santa Barbara, California, June 24 - 26, 1996** Efficient Green-Blue Polymer Light Emitting Electrochemical Cells.

186. **Japan MRS Meeting, Makuhari Conventional Center, Makuhari, Japan, May 20 - 24, 1996.** Recent Progress on Polymer Light-Emitting Electrochemical Cells.

187. **Image Science and Technology Conference, Minneapolis, May 19-22, 1996.** Polymer Light-Emitting Electrochemical Cells.

188. **27th International SAMPE Technical Conference, Albuquerque, NM, October 1995.** Efficient Blue Polymer Light Emitting Diodes from a Series of Poly(paraphenylene)s.

189. **Image Science and Technology Conference, Washington DC, May 1995.** The Application of High Surface Area Electrode in Polymer Light Emitting Diodes.

190. **National Science Foundation, Photoinduced Charge Transfer Conference, University of Rochester, Rochester, New York, August 1994.** Enhanced Performance of Polymer Light-emitting Diode by Using Polyaniline Electrodes.