Novel organic and organic-inorganic hybrid materials
Room-temperature operated solution-processed broadband photodetectors
Perovskite materials for energy generation and storage
Organic/polymer electronics and optoelectronics for energy generation and storage
Polymer-based biosensors and biochips
Organic/perovskite thermoelectric materials and devices

August 1982 - July 1986. B. Sc. Chemistry, Department of Chemistry, Northwest Normal University, P. R. China

Project: Ru-coordination compounds and their medical applications

Supervisor: Prof. Yuchen Pan

## TEACHING

Highly stretchable, self-adhesive, biocompatible, conductive hydrogels as fully polymeric strain sensors

**J. Mater. Chem. A**., 2020, 8, 20474-20485.

221 L. Y. Zheng, T. Zhu, Y. F. Li, H. D. Wu, C. Yi, J. H. Zhu, **X. Gong***

Enhanced Thermoelectric Performance of the F4-TCNQ Doped $FASnI_3$ Thin Films

**J. Mater. Chem. A**,

Solution-Processed Polymeric Thin Film as the Transparent Electrode for Flexible Perovskite Solar Cells

**ACS, Appl. Mater. Interf.,** 2020, DOI:10.1021/acsami.9b22891.

209 W. Z. Xu, T. Zhu, Y. R. Yang, L. Y. Zheng, L. Liu, **X. Gong***

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Bulk Heterojunction Perovskite Solar Cells Incorporated with $Zn_2SnO_4$ Nanoparticles as the Electron Acceptors,
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Solution-processed $VO_X$ prepared from a novel synthetic method as the hole extraction layer for polymer solar cells

**J. Mater. Chem. C**, **2016**, 4, 1953-1958.

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**Adv. Func. Mater.,** 2016**,** 26, 101-110.

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**J. Mater. Chem. A,** 2014, 2, 4004-4013.

124 C. Yi, R. Hu, H. Ren, X. W. Hu, S. Wang, **X. Gong*** and Y. Cao
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**J. Photonics for Energy**, 2014, 4, 04309901-04309908.

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Room-

Inverted polymer solar cells with 8.4% efficiency by conjugated polyelectrolyte
**Ener. Envir. Sci.,** 2012, 5, 8208.

100 T. B. Yang, K. Sun, X. L. Liu, W. Wei, T. Z. Yu, **X. Gong**,* D. L. Wang, and Y. Cao
Zinc oxide nanowire as an electron-extraction layer for broadband polymer photodetectors with an inverted device structure
**J. Phys. Chem. C**., 2012, 116, 13650.

99 T. B. Yang, D. G Qin, L. F. Lan, W. B. Huang, **X. Gong**,* J. B. Peng and Y. Cao
Inverted structure polymer solar cells with solution processed zinc oxide thin film as an Electron collection Layer
**Science China** (Chemistry), 2012, 55, 755.

98 T. B. Yang, M. Wang, F. Huang, L. Huang, J. B. Peng, **X. Gong**,* S. Z. D. Cheng, Y. Cao
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**95** **X. Gong**,* T. Z. Yu, Y. Cao, and A. J. Heeger
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A porphyrin-fullerene dyad with a supramolecular "double-cable" structure as a novel electron acceptor for bulk heterojunction polymer solar cells
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**JACS**, 2011, 133(25), 9638.

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Bulk heterojunction solar cells with large open-circuit voltage and electron transfer with small donor-acceptor energy offset
**Adv. Mater**. 2011, 23(20), 2272.

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Efficient, air-stable bulk heterojunction polymer solar cells using MoOx as the anode interfacial layer
**Adv. Mater**., 2011, 23(19), 2226.

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Polymer bulk heterojunction solar cells: function and utility of inserting a hole transport and electron blocking layer into the device structure

Enhanced electron injection in polymer light-emitting diodes: polyhedral oligomeric silsesquioxanes as dilute additives
**J. Phys. D-App. Phys. 2006**, 39 (10), 2048.

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**Adv. Mater.,** 2006, 18(5), 572.

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Thermally stable, efficient polymer solar cells with nanoscale control of the interpenetrating network morphology
**Adv. Func. Mater**., 2005, 15(10), 1617.

**64** **X. Gong**,* S. Wang, D. Moses, G. C. Bazan, and A. J. Heeger,
Multilayer polymer light-emitting diodes: white light emission with high efficiency
**Adv. Mater**., 2005, 17 (17), 2053.

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Water/methanol-soluble conjugated copolymer as an electron-transporting layer in polymer light-emitting diodes
**Adv. Mater**., 2005, 17 (3), 274.

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White electrophosphorescence from semiconducting polymer blends
**Polymer Materials Science and Engineering**, 2004, 90, 660.

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**Adv. Func. Mater**., 2003, 13, 25.

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**Adv. Func. Mater.,** 2003, 13, 325.

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**Adv. Func. Mater**., 2003, 13, 439.

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Temperature dependence of electronic energy from a polymer host to a triplet emitter in light emitting diode materials
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**Polymer Science, Part B, Polymer Physics**, 2003, 41, 2691.

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Origin of efficient light emission from a phosphorescent polymer/organometallic guest-host system.
**Phys. Rev. B.,** 2003, 68, 115209.

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**J. Nanosc. & Nanotech**., 2002, 2 (2), 151.

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Red electrophosphorescence from polymer doped with iridium complex
**Appl. Phys. Lett**., 2002, 11, 3711.

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**Adv. Mater**., 2002, 14, 581.

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**PNAS**, 2002, 99, 49.

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The role of ruthenium and rhenium diimine complexes in conjugated polymers that exhibit interesting opto-electronic properties
**Chemistry-A European Journal**, 2001, 7 (20), 4358.

42 **X. Gong**,* L. Liu, and W. J. Chen

Structures and fluorescence of nanocrystallines $MSO_4$:x$Sm_3$+ (M=Ca,

Tianjin Science and Technological Press, Tianjin, P. R. China, 324pp, 1995.

## C: Granted Patents

32 Solution-

16 Broadband polymer photodetectors using zinc oxides nanowire as an electron-transporting layer
**Gong, Xiong**, Yang, Tingbin, US 61/614,684

15 Solution-processed Perovskite Based Organic Inorganic Hybrid Photodetectors
**Gong, Xiong**, Wang, Kai, Liu, Chang, USPTO: 61/951,567

14 Enhanced electrical conductivity and thermoelectric performance of poly(3,4-ethylenedioxythiophene):poly(styrene sulfonate) by binary secondary dopants
**Gong, Xiong**, Yi, Chao, USPTO: 62/110,642.

13 Ultrasensitive solution-processed perovskite hybrid photodetectors
**Gong, Xiong**; Wang, Kai; Liu, Chang, WO 2015187225 A2 20151210.

12 Metal-oxide thin film as a hole-extraction layer for heterojunction solar cells
**Gong, Xiong**; Li, Bohao; Ren, He, WO 205070013 A1 20150514.

11 Methods and devices comprising soluble conjugated polymers
Bazan, Guillermo C.; Liu, Bin; **Gong, Xiong**; Heeger, Alan J.; Ma, Wanli; Iyer, Parameswar, US 9017766 B2 20150428.

10 Electron donor-fullerene conjugated molecules for organic photovoltaic cells
**Gong, Xiong**; Cheng, Stephen Z. D.; Zhang, Wei, US 20140174536 A1 20140626.

9 An organic polymer photo device with broadband response and increased photo-responsitivity
**Gong, Xiong**; Cheng, Stephen Z. D., WO 2014089066 A1 20140612.

8 Broadband polymer photodetectors using zinc oxide nanowire as an electron-transporting layer
**Gong, Xiong**US 20130248822 A1 20130926.

7 Enhanced efficiency polymer solar cells using aligned magnetic nanoparticles
**Gong, Xiong,** US 20130247993 A1 20130926

6 Broadband polymer photodetectors using zinc oxide nanowire as an electron-transporting layer
**Gong, Xiong,** WO 2013142870 A1 20130926.

5 Enhanced efficiency polymer solar cells using aligned magnetic nanoparticles
**Gong, Xiong**, WO 2013142876 A1 20130926.

4 p-type transition metal oxide-based films serving as hole transport
**Gong, Xiong**; Yang, Tingbin, WO 2013063562 A1 20130502

3 Multilayer polymer light-emitting diodes for solid state lighting applications
**Gong, Xiong**; Heeger, Alan J.; Moses, Daniel; Bazan, Guillermo C.; Wang, Shu, US 8076842 B2 20111213.

2 Multilayer films for package applications and making film by a solution process
**Gong, Xiong**; Yu, Gang, US 20090278277 A1 20091112

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78 ñHigh performance polymer solar cells via novel materials and interfacial engineeringò, Beihang University, Beijing, China, June 30, 2014.

77 ñHigh performance polymer solar cells via novel materials and interfacial engineeringò, Chemistry Institute, CAS, Beijing, China, June 29, 2014.

76 ñHigh performance polymer solar cells via device engineeri

55 ñHigh performance inverted polymer solar cellsò, Department of Chemical Engineering, University of Akron, April 2013, Akron, OH, USA

54 ñHigh performance inverted polymer solar cellsò, MRS Spring meeting, Apr. 2013, SFO, CA, USA

53 ñApproaching high performance polymer solar cells by interfacial engineering and novel materialsò, 2nd symposium of organic photovoltaic, Kent State University, April 2013, Kent, OH, USA

52 ñTowards high performance solar cellsò, APS March conference, Mar. 2013, Baltimore, Maryland, USA

51 ñSolution-processed polymer electronicsò, Research for Lunch, Research office of University of Akron, Feb. 2013, Akron, OH, USA

50 ñTowards high performance polymer photovoltaic cellsò, Lanzhou University, Dec. 2012, Lanzhou, China

49 ñInverted polymer solar cellsò, Northwest Normal University, Dec. 2012, Lanzhou, China

48

28 ñInfrared polymer photodetectorò, SPIE conference, Aug. 2010, San Diego, CA, USA

27 ñSolution-processed organic photodetectorsò, Xi An 3rd International Organic Electronics, June 2010, Xian, China

26 ñPolymer solar cellsò, Northwest Normal University, June 2010, Lanzhou, China

25 ñSolution-processed organic photodetectorsò, Lanzhou University, Jun. 2010, Lanzhou, China

24 ñSolution-processed organic photodetectorsò, South China University of Science and Technology, June 2010, Guanzhou, China

23 ñPolymer photodetectorò, MRS Spring Meeting, SFO, April 2010, CA, USA

22 ñPolymer solar cells with larger open-circuit voltageò, MRS Spring Meeting, SFO, April 2010, CA, USA

21 ñUltrasensitive polymer photodetectorsò, UCSB Organic Electronics Workshop, Sept. 2009, Santa Barbara, CA, USA

20 ñPolymer photodetectorò, SPIE, Aug. 2009, San Diego, CA, USA

19 ñSolution-processed ultrasensitive polymer photodetectorsò, PS, Mar. 2009, Pittsburgh, PA, USA

18 ñPolymer photodetectorsò, US-Japan Polymat, Aug. 2008, Ventura, CA, USA

17 ñSemiconducting polymers and its applicationsò, Lanzhou City University, Oct. 2007, Lanzhou, China

16 ñOrganic/polymer optoelectronic devicesò, Lanzhou University, Sept. 2007, Lanzhou, China

## GRANTS

### 1 Current grants

Title: Bulk heterojunction perovskite solar cells by novel perovskite materials

Award Amount: $483,000

Source: NSF

Role: PI

Period: July 2019 - June 2022

Title: Uncooled broadband solution-processed photodetectors

Total Award Amount: $819,543

Source: Air Force Scientific Research

Role: PI

Period: sept. 2015 - Dec. 2021

Title: "Novel Polymers: Characterization and Applications"

Award Amounons Award Amounons Award Amounons

Role: PI (Co-PI: Prof. Jean-Luc Bradas at University of Arizona)

Period: July 1, 2022- June 30, 2024

Title: Uncooled ultrasensitive solution-processed flexible broadband photodetectors

Source: NSF

Award Amount: $640,338

Role: PI

Period: July 1, 2022- June 30, 2025

Title: perovskite-organic ternary solar cells

Source: DOE

Award Amount: $300,000

Role: PI

Period: July 1, 2022- Dec. 30, 2023

Title: Charge carrier mobility in perovskite and organic semiconductors

Source: Air Force Scientific Research Program

Award Amount: $280,000

Role: PI

Period: July 1, 2022- June 30, 2025

**3. Past grants**

Title: High-performance electrophosphorescence polymer light-emitting diodes

Source: Mitsubishi Chemical Corporation

Award Amount: $1,500,000

Time period: Aug. 2002 - Aug. 2006

Role: Co-PI (PI: Prof. A. J. Heeger)

Title: Hemispherical Array Detector for Imaging

Source: DARPA

Award Amount: $25,500,000

Time period: July 2007 - Dec. 2010

Role: Co-PI (PI: Prof. A. J. Heeger)

Title: Organic electronics

Source: The University of Akron

Award amount: $500,000

Time period: Aug. 2010 - July 2014

Role. PI

Title: Novel Polymer/Organic Materials

Source: Gift from ONE

Award Amount: $450,000

Role: PI

Period: July 2012 ï Aug. 2015

Title: Ultrasensitive solution-process inverted polymer photodetectors

Award Amount: $408,000

Source: NSF

Role: PI

Time Period: July 2014 ï Aug. 2020

Title: Polymer photodetectors

Award Amount: $1,500,000
Source: Gift from UC

**2. Committees at UA**

UA Research Committee, University Library, Graduate Program Review; Admissions; Faculty Search (5 times); University Library; Dean Search; University Research, Director Search, etc.

**3. Review Panels**

Air Force Scientific Program, NSF, Canada NSF, Swiss NSF, Hong Kong Research Foundation, Iowa State Research Foundation, AAAS

**4. Conference Organizer**

2014 ACS Dallas; 2015 PPS Cleveland; 2016 ACS Philadelphia; 2016 ICSM Guangzhou; 2015 and 2016 First and Second Flexible Electronics: Science and Engineering

## REGULAR REVIEWER (25 journals)

| | | |
|---|---|---|
| Science | Nature Photonics | Nature Comm. |
| Chem. Rev. | J. Am. Chem. Soc. | Ange. Chem. Inter. Edi. |
| Adv. Mater. | Adv. Func. Mater. | Adv. Eng. Mater. |
| J. Phys. Chem. | Chem. Phys. | Polymer |
| J. Polymer Science | Appl. Phys. Lett. | J. Photovoltaic Cells |
| J. Phys. D. Appl. Phys. | Nano Sci. | Langmuir |
| Macromolecule | Macr. Rapid Comm. | Synth. Metal |
| Sol. Ener. Mate. and Sol. Cells | ACS Appl. Mate. & Inter. | Nano Scale |

## MEMBERSHIP OF ACADEMIC ASSOCIATIONS

1. Member of Materials Research Society (MRS)
2. Member of American Chemistry Society (ACS)
3.