

Kai Xiao

R&D Staff
Functional Hybrid Nanomaterials Group
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[Publications](#)



Education

East China Institute of Technology, China	Chemistry	B.A., 1998
Institute of Metal Research, Chinese Acad. of Sci., China	Material Science & Engr.	M. S., 2001
Institute of Chemistry, Chinese Acad. of Sci., China	Physical Chemistry	Ph. D., 2004

Professional Experience

2008–p Research Staff Member, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory (ORNL)

2011–p Joint faculty, Department of Electrical Engineering and Computer Sciences, University of Tennessee, Knoxville (UTK)

2004–2008 Postdoctoral Research Associate, Center for Nanophase Materials Sciences, ORNL

Professional and Synergistic Activities

2012 NSF Reviewer Panel on Organic Electronics; DOE-BES proposal reviewer, User proposal reviewer for the Molecular Foundry at Lawrence Berkeley National laboratory and Stanford Synchrotron Radiation Lightsource (SSRL).

2008–p Editorial Board, *Scientific Report*; *Open Materials Science Journal*; *AIMS Materials Science*

2006–p Member, Materials Research Society; American Chemical Society

2005–p Reviewer, *Nature Nanotechnology*; *Nature Comm.*; *Scientific Report*; *J. Am. Chem. Soc.*; *Nano Letters*, *J. Phys. Chem. B*; *Chem. Mater.*; *Chem. Mater.*; *ACS Nano*; *Langmuir*; *Angew. Chem. Int. Ed.*; *Adv. Mater.*; *Adv. Func. Mater.*; *Small*; *ChemSusChem*; *PCCP*; *Chem. Eur. J*; *Appl. Phys. Lett.*; *Nanoscale*; *J. Mater. Chem.*; *Polymer Chemistry*; *Polymer Reviews*; *J. Appl. Polymer Sci.*; *Two-Dimensional Materials*

Honors and Awards

2007 The National Top 100 Excellent Ph. D. Thesis Award in China, Ministry of Education

2006 The Top 50 Excellent Ph. D. Thesis Award of the Chinese Academy of Sciences

2004 Outstanding Thesis Award of the 24th Annual Meeting, Chinese Chemical Society

Publications (Over 90 articles in referred journals and books)

Full publication list available: [Kai Xiao](#)

Research Synopsis:

- Two-dimensional (2D) nanomaterials, including transition metal dichalcogenides, metal monochalcogenides, and graphene.***
Synthesis of 2D nanomaterials and their van der Waals heterostructures using CVD, PVD, mechanic exfoliation, and dry transfer methods; Optical, structural, and electrical characterization of 2D nanomaterials; Charge transport study of 2D nanomaterials;
- Solution-processed thin film electronic devices for organic semiconductors and hybrid perovskites, including field-effect transistors (FETs) and photovoltaics (PVs), spin valves, organic memory, sensors.***

Optical and optoelectronic characterization of solution-processed semiconductor materials (small molecules, conducting polymers, and hybrid perovskites); Processing those materials using various methods, including spin-coating, thermal deposition, spray printing, to form gradient or doped single/multilayer thin films for energy-related electronic devices (OFETs, OPVs, memories, sensors).

3. ***Inorganic/organic nanoscale electronics.***

Fabrication 1D and 2D nanoscale electronic devices (FETs, photodetectors, memories) of inorganic/organic nanostructures using various processing technologies and testing of nanoscale devices in controlled environment.

Collaborations: D. B. Geohegan (ORNL); G. Gu (UTK); J. Carlos (ORNL); J. Tao (Brookhaven National Laboratory); N. S. Goroff (Stony Brook Univ.); K. Hong (ORNL); W. Hu (CAS); P. Hu (Harbin Institute of Technology); P. Joshi (ORNL); Z. Pan (Univ. of GA); S. M. Weiss (Vanderbilt Univ.); Qiming Zhang (Penn State Univ.)

Graduate and Postdoctoral Advisors and Advisees:

Graduate Advisor: Prof. Daoben Zhu/Yunqi Liu (Institute of Chemistry, Chinese Academy of Sciences)

Postdoctoral Advisor: Dr. David B. Geohegan (Oak Ridge National Laboratory)

Graduate and Postdoctoral Advisees:

Graduate: Sanjib Das (Univ. of TN, Knoxville); Wan Deng (Univ. of TN, Knoxville); Akinola D. Oyedele (Univ. of TN, Knoxville).

Postdoctoral: Ming Shao (Air Force Research Lab), Kai Wang (Current); Xufan Li (Current); Ming-Wei Lin (Current); Bin Yang (Current).