CURRICULUM VITAE

Ding-Shyue (Jerry) Yang

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Education

2009 Ph.D. in Chemistry, California Institute of Technology (Caltech), Pasadena, CA
Research Advisor: Ahmed H. Zewail
1999 M.S. in Chemistry, National Taiwan University, Taipei, Taiwan
Research Advisor: Bih-Yaw Jin
1997 B.S. in Chemistry (minor in Mathematics), National Taiwan University, Taipei, Taiwan

Professional Experience

2018–present Associate Professor of Chemistry, University of Houston (UH), Houston, TX
2012–2018 Assistant Professor of Chemistry, University of Houston, Houston, TX
2010–2012 Scientist, California Institute of Technology, Pasadena, CA
2009–2010 Postdoctoral Scholar, California Institute of Technology, Pasadena, CA
2002–2009 Research and Teaching Assistant, California Institute of Technology, Pasadena, CA
2001–2002 Research Assistant, Chemistry, National Taiwan University, Taipei, Taiwan
1997–1999 Research Assistant, Chemistry, National Taiwan University, Taipei, Taiwan

Honors and Awards

2017 *NSF Faculty Early Career Development (CAREER) Award*
2013–2014 *Welch Professorship*, Welch Foundation & Texas Center for Superconductivity at UH
2009 *Herbert Newby McCoy Award*, Chemistry Division, Caltech
2009 *Phi Tau Phi Scholarship*, Phi Tau Phi Scholastic Honor Society
2008 *Lecturer*, Everhart Lecture Series, Caltech
2000 *National Outstanding Graduate Research Award*, Taiwan
1999 *Dean's Award*, College of Science, National Taiwan University, Taiwan
1999 *Yen Thesis Award*, Chemistry Department, National Taiwan University, Taiwan
1997 *Summa cum laude,* B.S. Chemistry, National Taiwan University, Taiwan
1993–1997 *University President's List* (7 times), National Taiwan University, Taiwan
1993–1997 *Yen-Tze Lee (Nobel Laureate) Scholarship*, Taiwan
1993–1997 *Full Scholarship for National Gifted Students in Fundamental Science*, Taiwan
1993 *Awardee*, Ten Outstanding Adolescents of the Worldwide Chinese
1993 *Gold Medal*, 25th International Chemistry Olympiad, Italy

Peer-Reviewed Publications

Publications based on work at the University of Houston ***(* indicates corresponding author)***

23. Ding-Shyue Yang*, Bolin Liao*, Omar F. Mohammed*, "Scanning Ultrafast Electron

Microscopy: Four-Dimensional Imaging of Materials Dynamics in Space and Time," *MRS Bull.* **2018**, *43*, 491–496.

22. Napat Punpongjareorn, Xing He, Zhongjia Tang, Arnold M. Guloy, Ding-Shyue Yang*, "Ultrafast Switching of Valence and Generation of Coherent Acoustic Phonons in Semiconducting Rare-Earth Monosulfides," *Appl. Phys. Lett.* **2017**, *111*, 081903.
21. Xing He, Napat Punpongjareorn, Weizheng Liang, Yuan Lin, Chonglin Chen, Allan J. Jacobson, Ding-Shyue Yang*, "Photoinduced Strain Release and Phase Transition Dynamics of Solid-Supported Ultrathin Vanadium Dioxide," *Sci. Rep.* **2017**, *7*, 10045.
20. Basamat S. Shaheen, Jingya Sun, Ding-Shyue Yang*, Omar F. Mohammed*, "Spatiotemporal Observation of Electron-Impact Dynamics in Photovoltaic Materials Using 4D Electron Microscopy," *J. Phys. Chem. Lett.* **2017**, *8*, 2455–2462.
19. Ding-Shyue Yang*, Xing He, "Structures and Ultrafast Dynamics of Interfacial Water Assemblies on Smooth Hydrophobic Surfaces," *Chem. Phys. Lett.* **2017**, *683*, 625–632.
    - Invited submission to Ahmed Zewail Memorial Issue
18. Xing He, Chengyi Wu, Ding-Shyue Yang*, "Communication: No Guidance Needed: Ordered Structures and Transformations of Thin Methanol Ice on Hydrophobic Surfaces," *J. Chem. Phys.* **2016**, *145*, 171102.
17. Ding-Shyue Yang, Peter Baum, Ahmed H. Zewail*, "Ultrafast Electron Crystallography of the Cooperative Reaction Path in Vanadium Dioxide," *Struct. Dyn.* **2016**, *3*, 034304.
    - Selected in Editor's Picks
16. Xing He, Napat Punpongjareorn, Chengyi Wu, Ilya A. Davydov, Ding-Shyue Yang*, "Ultrafast Carrier Dynamics of CdTe: Surface Effects," *J. Phys. Chem. C* **2016**, *120*, 9350–9356.
15. Xing He, Chengyi Wu, Karjini Rajagopal, Napat Punpongjareorn, Ding-Shyue Yang*, "Ordered Ionic Liquid Structure Observed at Terraced Graphite Interfaces," *Phys. Chem. Chem. Phys.* **2016**, *18*, 3392–3396.

*<u>Publications prior to UH appointment</u> (***** indicates corresponding author)*

14. Ding-Shyue Yang, Omar F. Mohammed, Ahmed H. Zewail*, "Environmental Scanning Ultrafast Electron Microscopy: Structural Dynamics of Solvation at Interfaces," *Angew. Chem. Int. Ed.* **2013**, *52*, 2897–2901.
13. Omar F. Mohammed, Ding-Shyue Yang, Samir K. Pal, Ahmed H. Zewail*, "4D Scanning Ultrafast Electron Microscopy (S-UEM): Visualization of Materials Surface Dynamics," *J. Am. Chem. Soc.* **2011**, *133*, 7708–7711.
12. Ding-Shyue Yang, Omar F. Mohammed, Ahmed H. Zewail*, "Scanning Ultrafast Electron Microscopy," *Proc. Natl. Acad. Soc. USA* **2010**, *107*, 14993–14998.
11. Ding-Shyue Yang, Ahmed H. Zewail*, "Ordered Water Structure at Hydrophobic Graphite Interfaces Observed by 4D, Ultrafast Electron Crystallography," *Proc. Natl. Acad. Soc. USA* **2009**, *106*, 4122–4126.

10. Fabrizio Carbone, Ding-Shyue Yang, Enrico Giannini, A. H. Zewail*, "Direct Role of Structural Dynamics in Electron–Lattice Coupling of Superconducting Cuprates," *Proc. Natl. Acad. Soc. USA* **2008**, *105*, 20161–20166.
    - Highlighted in *This Week in PNAS* **2008**, *105*, 20047.
9. Ding-Shyue Yang, Changshi Lao, Ahmed H. Zewail*, "4D Electron Diffraction Reveals Correlated Unidirectional Behavior in Zinc Oxide Nanowires," *Science* **2008**, *321*, 1660–1664.
8. Peter Baum, Ding-Shyue Yang, Ahmed H. Zewail*, "4D Visualization of Transitional Structures in Phase Transformations by Electron Diffraction," *Science* **2007**, *318*, 788–792.
    - Highlighted by a Perspective in *Science* **2007**, *318*, 755–756.
7. Jau Tang, Ding-Shyue Yang, Ahmed H. Zewail*, "Ultrafast Electron Crystallography. 3. Theoretical Modeling of Structural Dynamics," *J. Phys. Chem. C* **2007**, *111*, 8957–8970.
6. Nuh Gedik, Ding-Shyue Yang, Gennady Logvenov, Ivan Bozovic, Ahmed H. Zewail*, "Nonequilibrium Phase Transitions in Cuprates Observed by Ultrafast Electron Crystallography," *Science* **2007**, *316*, 425–429.
5. Ding-Shyue Yang, Nuh Gedik, Ahmed H. Zewail*, "Ultrafast Electron Crystallography. 1. Nonequilibrium Dynamics of Nanometer-scale Structures," *J. Phys. Chem. C* **2007**, *111*, 4889–4949.
    - Highlighted as Cover Article, *J. Phys. Chem. C* **2007**, *111*, Issue 13.
    - Selected in Virtual Issue in Memory of Ahmed Zewail, *J. Phys. Chem. A* **2016**, *120*, 7405–7407; *J. Phys. Chem. B* **2016**, *120*, 10043–10045; *J. Phys. Chem. C* **2016**, *120*, 21145–21147
4. Chong-Yu Ruan, Ding-Shyue Yang, Ahmed H. Zewail*, "Structures and Dynamics of Self-Assembled Surface Monolayers Observed by Ultrafast Electron Crystallography," *J. Am. Chem. Soc.* **2004**, *126*, 12797–12799.
    - Highlighted in *Anal. Chem.* **2004**, *76*, 425A.
3. D. Hern Paik, I-Ren Lee, Ding-Shyue Yang, J. Spencer Baskin, Ahmed H. Zewail*, "Electrons in Finite-sized Water Cavities: Hydration Dynamics Observed in Real Time," *Science* **2004**, *306*, 672–675.
    - Highlighted by a Perspective in *Science* **2004**, *306*, 618–619.
2. D. Hern Paik, Ding-Shyue Yang, I-Ren Lee, Ahmed H. Zewail*, "The Transition State of Thermal Organic Reactions: Direct Observation in Real Time," *Angew. Chem. Int. Ed.* **2004**, *43*, 2830–2834.
1. Sundarraj Sudhakar, Jui-Hung Hsu, Yi-Hung Liu, Yu Wang, Ding-Shyue Yang, Bih-Yaw Jin, Tien-Yau Luh*, "Synthesis and photophysical studies of siloxane-tethered cyclophanes," *Silicon Chem.* **2002**, *1*, 403–407.

Patents *based on work prior to UH appointment*

1. "Method and System for 4D Tomography and Ultrafast Scanning Electron Microscopy," Ahmed H. Zewail, Oh-Hoon Kwon, Omar F. Mohammed, Ding-Shyue Yang, U.S. Patent No. US8,841,613, issued September 23, 2014.

Presentations

Presentations based on work performed at UH

28. Department of Applied Physics, Kyung Hee University, Suwon, South Korea (May 30th, 2018)
"Visualizing Structures and Photoinduced Dynamics of Materials and Interfaces Using Time-Resolved Electron Imaging Techniques"
27. 255th American Chemical Society National Meeting, New Orleans, LA (Mar. 19th, 2018)
"Ordered ionic liquid structure observed at terraced graphite interfaces by reflection high-energy electron diffraction"
26. 255th American Chemical Society National Meeting, New Orleans, LA (Mar. 18th, 2018)
"Comparison of photoinduced ultrafast dynamics of semiconducting rare-earth and transition-metal chalcogenides"
25. Department of Chemistry, Emory University, Atlanta, GA (Sept. 18th, 2017)
"Visualizing Structures and Photoinduced Dynamics of Materials and Interfaces Using Time-Resolved Electron Imaging Techniques"
24. 2017 Korea–Japan Molecular Science Symposium, Busan, South Korea (July 11th, 2017)
"Structural Phase Transitions and Dynamics of Solid-Supported Interfacial Assemblies"
23. Department of Chemistry, Pusan National University, Busan, South Korea (July 7th, 2017)
"Visualizing Structures and Photoinduced Dynamics of Materials and Interfaces Using Time-Resolved Electron Imaging Techniques"
22. Department of Chemistry, Korea Advanced Institute of Science & Technology, Daejeon, South Korea (July 6th, 2017)
"Visualizing Structures and Photoinduced Dynamics of Materials and Interfaces Using Time-Resolved Electron Imaging Techniques"
21. Department of Chemistry, Ulsan National Institute of Science & Technology, Ulsan, South Korea (July 4th, 2017)
"Visualizing Structures and Photoinduced Dynamics of Materials and Interfaces Using Time-Resolved Electron Imaging Techniques"
20. Department of Materials Science and Engineering, Inha University, Incheon, South Korea (July 3rd, 2017)
"Visualizing Structures and Photoinduced Dynamics of Materials and Interfaces Using Time-Resolved Electron Imaging Techniques"
19. Collaborative Conference on Materials Research 2017, Jeju, South Korea (June 28th, 2017)
"Photoinduced Structural Phase-Transition Dynamics of Strained Ultrathin Vanadium Dioxide"
18. Department of Physics & Astronomy, Michigan State University, MI (May 1st, 2017)
"Visualizing Structures and Photoinduced Dynamics of Materials and Interfaces Using Time-Resolved Electron Imaging Techniques"
17. Materials Research Society 2017 Spring Meeting, Phoenix, AZ (Apr. 20th, 2017)
"Structural Phase Transitions and Dynamics of Solid-Supported Interfacial Assemblies"

16. 253rd American Chemical Society National Meeting, San Francisco, CA (Apr. 4th, 2017)
"Structural Transformations and Self-Assembly of Interfacial Methanol Ice on Hydrophobic Surfaces"
15. American Physical Society March Meeting, New Orleans, LA (March 17th, 2017)
"Photoinduced Structural Dynamics and Transformation Pathway of Sapphire-Supported Ultrathin Vanadium Dioxide"
14. Department of Chemistry, Texas A&M University, TX (March 10th, 2017)
"Visualizing Structures and Photoinduced Dynamics of Materials and Interfaces Using Time-Resolved Electron Imaging Techniques"
13. International Symposium on Chemical Sciences, University of Houston, TX (Jan. 21st, 2017)
"Visualizing Structures and Photoinduced Dynamics of Materials and Interfaces Using Time-Resolved Electron Imaging Techniques"
12. Nano Speaker Series, Department of Electrical & Computer Engineering, University of Houston, TX (Oct. 14th, 2016)
"Visualizing Photoinduced Structural Dynamics of Materials and Interfaces Using Time-Resolved Electron Imaging Techniques"
11. SPIE Optics + Photonics 2015, San Diego, CA (Aug. 12th, 2015)
"Effect of Surface Conditions on Ultrafast Carrier Dynamics of Crystalline CdTe"
10. Electron Microscopy Frontiers, KAUST, Saudi Arabia (Dec. 9th, 2014)
"Visualization of the Structural Dynamics of Interfacial Molecular Assemblies by Ultrafast Electron Imaging Techniques"
9. Femtosecond Electron Imaging and Spectroscopy 2013, Key West, FL (Dec. 12th, 2013)
"Environmental Scanning Electron Microscopy: Probing Ultrafast Solvation Dynamics at Interfaces"
8. Department of Chemistry and Biochemistry, Baylor University, TX (Feb. 8th, 2013)
"Time-resolved Electron Imaging of Ultrafast Electronic and Structural Dynamics"

Presentations Prior to the UH Appointment

7. Institute of Atomic and Molecular Sciences, Academia Sinica, Taiwan (July 6th, 2012)
"Structures, Dynamics, and Nonequilibrium Phase Transformations of Water Assemblies at Interfaces"
6. Department of Chemistry, National Taiwan University, Taiwan (May 31st, 2012)
"Seeing is Believing: 4D Visualization of Electronic and Structural Dynamics"
5. Department of Chemistry and Biochemistry, National Chung Cheng University, Taiwan (May 22nd, 2012)
"Seeing is Believing: 4D Visualization of Electronic and Structural Dynamics"
4. Department of Physics, University of Texas at Austin, TX (Feb. 20th, 2012)
"Seeing is Believing: Four-dimensional Visualization of Electronic and Structural Dynamics"

3. Department of Chemistry, Princeton University, NJ (Dec. 9th, 2011)
   "Seeing is Believing: Visualization of Electronic and Structural Dynamics by Ultrafast Electron Crystallography and Microscopy"
2. Department of Chemistry, University of Houston, TX (Nov. 9th, 2011)
   "Seeing is Believing: Visualization of Electronic and Structural Dynamics by Ultrafast Electron Crystallography and Microscopy"
1. Department of Chemistry, National Taiwan University, Taiwan (Oct. 9th, 2008)
   "Seeing is Believing: Visualization of Condensed-Matter Structure in Four Dimensions"

Courses Taught at UH

1. Fall 2012, CHEM 1372: Fundamentals of Chemistry for Engineers
2. Fall 2013, CHEM 4372: Physical Chemistry II
3. Spring 2014, CHEM 4372: Physical Chemistry II
4. Fall 2014, CHEM 6321: Quantum Chemistry
5. Spring 2015, CHEM 4372: Physical Chemistry II
6. Fall 2015, CHEM 6321: Quantum Chemistry
7. Spring 2016, CHEM 4372: Physical Chemistry II
8. Fall 2017, CHEM 4372: Physical Chemistry II
9. Spring 2018, CHEM 6314: Spectroscopy