

Prof. Tae-Hee Han, Ph.D.

TEL: +82-2-2220-0411,
E-mail: taeheehan@hanyang.ac.kr
OR taeheehan1011@gmail.com

Associate Professor,
Division of Materials Science and Engineering,
Hanyang University, Seoul 04763, Republic of Korea

EDUCATION

Ph.D. in Materials Science and Engineering.....Mar. 2010-Feb. 2015

- Pohang University of Science and Technology (**POSTECH**), Korea
- Dissertation Title: “*Flexible Organic Light-Emitting Diodes with Graphene Anode*”,
Advisor: Prof. Tae-Woo Lee

B.S. in Materials Science and Engineering..... Mar. 2006-Feb. 2010

- Pohang University of Science and Technology (**POSTECH**), Korea

PROFESSIONAL EXPERIENCE

Associate Professor in Division of Materials Science and Engineering.....Sep. 2022-present

Assistant Professor in Division of Materials Science and Engineering.....Sep. 2019-Aug. 2022

- **Hanyang University**, Republic of Korea.

Postdoctoral Scholar in Materials Science and Engineering.....May 2017-Aug. 2019

- University of California Los Angeles (**UCLA**), United States of America.
- Research: *Perovskite Solar Cells/ LEDs*, Advisor: Prof. Yang Yang

Postdoctoral Scholar in Materials Science and Engineering.....Oct. 2016-Apr. 2017

- Seoul National University (**SNU**), Republic of Korea.
- Research: *Solution-Processed organic LEDs*, Advisor: Prof. Tae-Woo Lee

Postdoctoral Scholar in Polymer Research Institute.....Mar. 2015-Oct. 2016

- Pohang University of Science and Technology (**POSTECH**), Republic of Korea.
- Research: *Chemical Doping of Graphene*, Advisor: Prof. Tae-Woo Lee

HONORS AND AWARDS

• **New Researcher Award**.....Feb.2022

The President of Hanyang University

• **Researcher of the Month**.....Oct. 2021

Hanyang University

• **POSCO Science Fellowship**.....Nov. 15 2020

POSCO TJ Park Foundation

• **Promising Young Scientist of Korea**.....Nov. 02. 2016

The Korean Academy of Science and Technology

• **Grand Prize for Oral Presentation**.....Mar. 27. 2015

The 2nd Korean Graphene Symposium

• **POSTECH Best Thesis Award (Geun-Soo Jang Award)**.....Feb. 13. 2015

The President of Pohang University of Science and Technology (POSTECH)

• **SAMSUNG Humantech Paper Award**.....Feb. 11. 2015

SAMSUNG ELECTRONICS Co., Ltd

- **Best New Ph.D. Award**.....Nov. 23. 2014
Department of Materials Science and Engineering (POSTECH)
- **Outstanding Poster Paper Award**..... Aug. 29. 2013
The 13th International Meeting on Information Display (IMID)
- **Excellent Paper Award**.....Dec. 26. 2012
Department of Materials Science and Engineering (POSTECH)
- **Grand Prize for Paper Presentation**.....Nov. 09. 2012
The Korean Institute of Metals and Materials (KIMM)
- **Young Scientist Award (ME&D Young-Soo Kwon Award)**.....May 25. 2012
The 23rd International Conference on Molecular Electronics and Devices (ME&D)
- **Excellent Researcher Award**.....Mar. 29. 2012
SAMSUNG MOBILE DISPLAY Co., Ltd
- **Best Poster Award**.....May 20. 2010
The 21st International Conference on Molecular Electronics and Devices (ME&D)
- **Department Fund Scholarship (excellent graduate student)**.....2012
Department of Materials Science and Engineering (POSTECH)
- **Full National Undergraduate Science and Technology Scholarship**.....2006-2010
Korea Student Aid Foundation

SELECTED JOURNAL PUBLICATIONS

- ◆ 55 total, 29 1st or corresponding-authored publications including *Nat. Photon.*, *Nat. Rev. Mater.* 4 *Nat. Commun.*, *Sci. Adv.*, *Energy Environ. Sci.*, 5 *Adv. Mater.*, *Joule*, *Angew. Chem.*, *Nano Lett.* *Adv. Funct. Mater.* etc.
 - ◆ Average SCI Impact Factor (1st or corres.-authored): 23.445, Total citations: 6,263 times
1. **T.-H. Han**, Y. Lee, M.-R. Choi, S.-H. Woo, S.-H. Bae, B. H. Hong, J.-H. Ahn and T.-W. Lee, *Extremely Efficient Flexible Organic Light-Emitting Diodes with Modified Graphene Anode*, *Nature Photon.* 6, 105-110 (2012). **SCI Impact Factor = 38.77 (cited 1413 times)**
 - **Highlighted in Nature Photonics: News and Views**, Y. Zhu and J. M. Tour, *Organic light-emitting diodes: Non-oxide boost*, *Nature Photon.* 6, 72-73 (2012).
 2. **T.-H. Han**, K. Y. Jang, Y. Dong, R. H. Friend, E. H. Sargent and T.-W. Lee, A roadmap for the commercialization of perovskite light emitters, *Nature Rev. Mater.* 7, 757–777 (2022). **SCI Impact Factor = 76.679**
 3. **T.-H. Han**, J.-W. Lee, C. Lee, S.-J. Lee, N. D. Marco, Y. Haung, H. Lee, Y. Yang, *Perovskite-Polymer Composite Cross-linker Approach for Highly-stable and Efficient Perovskite Solar Cells*, *Nature Commun.* 10, 520 (2019). **SCI Impact Factor = 14.919**
 4. J. Lee[†], **T.-H. Han**[†] (†equal 1st author), D. Y. Jung, J. Seo, H.-K. Seo, H. Cho, M.-H. Park, E. Kim, J. Chung, S.-Y. Choi, T.-S. Kim, T.-W. Lee, S. Yoo, *Synergetic Electrode Architecture for Efficient Graphene-based Flexible Organic Light Emitting Diodes*, *Nature Commun.*, 7, 11791 (2016). **SCI Impact Factor = 14.919**
 5. S.-J. Kwon[†], **T.-H. Han**[†] (†equal 1st author), T. Y. Ko, N. Li, Y. Kim, D. J. Kim, S.-H. Bae, Y. Yang, B. H. Hong, K. S. Kim, S. Ryu and T.-W. Lee, *Extremely Stable Graphene Electrodes*

- Doped with Macromolecular Acid, Nature Commun.* **9**, 2037 (2018). **SCI Impact Factor = 14.919**
6. J.-W. Lee[†], S. Tan[†], **T.-H. Han[†]** ([†]equal 1st author), R. Wang, L. Zhang, C. Park, M. Yoon, C. Choi, M. Xu, M. E. Liao, S.-J. Lee, S. Nuryyeva, C. Zhu, K. Huynh, M. S. Goorsky, Y. Huang, X. Pan, and Y. Yang | Solid-phase hetero epitaxial growth of α -phase formamidinium perovskite, *Nature Commun.* **11**, 5514 (2020). **SCI Impact Factor = 14.919**
 7. **T.-H. Han**, M.-R. Choi, C.-W. Jeon, Y.-H. Kim, S.-K. Kwon, T.-W. Lee, *Ultra-high Efficiency Solution-Processed Simplified Small-Molecule Organic Light-Emitting Diodes Using Universal Host Materials, SCIENCE Adv.* **2**, e1601428 (2016). **SCI Impact Factor = 14.136**
 8. **T.-H. Han***, J.-W. Lee, Y. J. Choi, C. Choi, S. Tan, Z. Dai, S.-J. Lee, O. Lin, L. Cai, D. Kim, Y. Yang, Surface-2D/ bulk-3D Hetero-phased Formamidinium Perovskite Nanograins for Long-term Stable Light-Emitting Diodes, *Adv. Mater.* **32**, 1905674 (2020). **SCI Impact Factor = 30.849**
 9. **T.-H. Han**, M.-R. Choi, S.-H. Woo, S.-Y. Min, C.-L. Lee and T.-W. Lee, *Molecularly Controlled Interfacial Layer Strategy Toward Highly Efficient Simple-Structured Organic Light-Emitting Diodes, Adv. Mater.* **24**, 1487-1493 (2012). **SCI Impact Factor = 30.849**
 10. **T.-H. Han**, S. Tan, J. Xue, L. Meng, J.-W. Lee, Y. Yang, *Interface and Defect Engineering for Metal Halide Perovskite Optoelectronic Devices, Adv. Mater.* 1803515 (2019). **SCI Impact Factor = 30.849**
 11. S. Ahn[†], **T.-H. Han[†]**([†]equal 1st author), K. Maleski, J. Song, Y.-H. Kim, M.-H. Park, H. Zhou, S. Yoo, Y. Gogotsi, T.-W. Lee, 2D Titanium Carbide MXene Flexible Electrode for High-Efficiency Light-Emitting Diodes, *Adv. Mater.* 202000919 (2020) In Press. **SCI Impact Factor = 30.849**
 12. J. Y. Woo, M.-H. Park, S.-H. Jeong, Y.-H. Kim, B. Kim, T.-W. Lee, **T.-H. Han***, Advances in Solution-processed OLEDs and their Prospects for Use in Displays, *Adv. Mater.* **35**, 2207454 (2023). **SCI Impact Factor = 32.086**
 13. K.-G. Lim[†], **T.-H. Han[†]**([†] equal 1st author), T.-W. Lee, Engineering electrodes and metal halide perovskite materials for flexible/stretchable perovskite solar cells and light-emitting diodes, *Energy Environ. Sci.* **14**, 2009 (2021). **SCI Impact Factor = 38.532**
 14. **T.-H. Han**, S.-J. Kwon, N. Li, H.-K. Seo, W. Xu, K. S. Kim, T.-W. Lee, *Versatile p-Type Chemical Doping to Achieve Ideal Flexible Graphene Electrodes, Angew. Chem. Int. Ed.*, **55**, 6197-6201 (2016) **SCI Impact Factor = 15.336**
 15. S.-H. Jeong[†], J. Park[†], **T.-H. Han[†]**([†]equal 1st author), F. Zhang, K. Zhu, J.-S. Kim, M.-H. Park, M. O. Reese, S. Yoo, T.-W. Lee, Characterizing the Efficiency of Perovskite Solar Cells and Light-Emitting Diodes, *Joule*, **4**, 1004-1033 (2020). **SCI Impact Factor = 41.248**
 16. **T.-H. Han***, Y. Zhao, J. Yoon, J. Y. Woo, E.-H. Cho, W. D. Kim, C. Lee, J.-W. Lee, J.-M. Choi, J. Han, J.-S. Nam, K. Wang, S. Priya, M. Balaban, I. Jeon, Y. Yang, Spontaneous Hybrid Crosslinked Network Induced by Multifunctional Copolymer Towards Mechanically-Resilient Perovskite Solar Cells, *Adv. Funct. Mater.* **32**, 2207142 (2022). **SCI Impact Factor = 19.924**
 17. Y.-H. Kim[†], **T.-H. Han^{†,*}** (^{†,*}equal 1st and corresp. author), C. Lee, Y.-H. Kim, Y. Yang, T.-W. Lee*, Molecular-scale strategies to achieve high efficiency and low efficiency roll-off in simplified solution-processed organic light-emitting diodes, *Adv. Funct. Mater.* 2005292 (2020). **SCI Impact Factor = 18.808**

TOTAL JOURNAL PUBLICATIONS

55. T. H. Kim, I. Park, K. H. Lee, J.-H. Sim, M.-H. Park, **T.-H. Han**, U. Park, J.-Y. Jang, H. B. Park, Y.-H. Kim, Investigating the interfacial properties of halide perovskite/TiO_x heterostructures for versatile photocatalytic reactions under sunlight, *Nanoscale* 15, 7710 (2023). **SCI Impact Factor = 8.307**
54. J. Y. Woo, M.-H. Park, S.-H. Jeong, Y.-H. Kim, B. Kim, T.-W. Lee, **T.-H. Han**^{*}, Advances in Solution-processed OLEDs and their Prospects for Use in Displays, *Adv. Mater.* 35, 2207454 (2023). **SCI Impact Factor = 32.086**
53. Y. Zhao, I. Yavuz, M. Wang, M. H. Weber, M. Xu, J.-H. Lee, S. Tan, T. Huang, D. Meng, R. Wang, J. Xue, S.-J. Lee, S.-H. Bae, A. Zhang, S.-G. Choi, Y. Yin, J. Liu, **T.-H. Han**, Y. Shi, H. Ma, W. Yang, Q. Xing, Y. Zhou, P. Shi, S. Wang, E. Zhang, J. Bian, X. Pan, N.-G. Park, J.-W. Lee, Suppressing ion migration in metal halide perovskite via interstitial doping with a trace amount of multivalent cations, *Nature Mater.* 21, 1396 (2022), **SCI Impact Factor = 47.656**
52. **T.-H. Han**^{*}, Y. Zhao, J. Yoon, J. Y. Woo, E.-H. Cho, W. D. Kim, C. Lee, J.-W. Lee, J.-M. Choi, J. Han, J.-S. Nam, K. Wang, S. Priya, M. Balaban, I. Jeon, Y. Yang, Spontaneous Hybrid Crosslinked Network Induced by Multifunctional Copolymer Towards Mechanically-Resilient Perovskite Solar Cells, *Adv. Funct. Mater.* 32, 2207142 (2022). **SCI Impact Factor = 19.924**
51. **T.-H. Han**, K. Y. Jang, Y. Dong, R. H. Friend, E. H. Sargent and T.-W. Lee, A roadmap for the commercialization of perovskite light emitters, *Nature Rev. Mater.* 7, 757–777 (2022). **SCI Impact Factor = 76.679**
50. K.-G. Lim[†], **T.-H. Han**[†] (equal 1st author), T.-W. Lee, Engineering electrodes and metal halide perovskite materials for flexible/stretchable perovskite solar cells and light-emitting diodes, *Energy Environ. Sci.* 14, 2009 (2021). **SCI Impact Factor = 38.532**
49. Y. Zhao, P. Zhu, S. Huang, S. Tan, M. Wang, R. Wang, J. Xue, **T.-H. Han**, S.-J. Lee, A. Zhang, T. Huang, P. Cheng, D. Meng, J.-W. Lee, J. Marian, J. Zhu, Y. Yang | Molecular interaction regulates performance and longevity of defect passivation for metal halide perovskite solar cells, *J. Am. Chem. Soc.* 142, 20071 (2020). **SCI Impact Factor = 15.419**
48. J.-W. Lee[†], S. Tan[†], **T.-H. Han**[†] (†equal 1st author), R. Wang, L. Zhang, C. Park, M. Yoon, C. Choi, M. Xu, M. E. Liao, S.-J. Lee, S. Nuryyeva, C. Zhu, K. Huynh, M. S. Goorsky, Y. Huang, X. Pan, and Y. Yang | Solid-phase hetero epitaxial growth of α -phase formamidinium perovskite, *Nature Commun.* 11, 5514 (2020). **SCI Impact Factor = 14.919**
47. Y.-H. Kim[†], **T.-H. Han**^{†,*} (†,*equal 1st and corresp. author), C. Lee, Y.-H. Kim, Y. Yang, T.-W. Lee^{*}, Molecular-scale strategies to achieve high efficiency and low efficiency roll-off in simplified solution-processed organic light-emitting diodes, *Adv. Funct. Mater.* 2005292 (2020). **SCI Impact Factor = 18.808**
46. C. Chen[†], **T.-H. Han**[†] (†equal 1st author), S. Tan, J. Xue, Y. Zhao, Y. Liu, H. Wang, W. Hu, C. Bao, M. Mazzeo, R. Wang, Y. Duan, Y. Yang, Efficient Flexible Inorganic Perovskite Light-Emitting Diodes Fabricated with CsPbBr₃ Emitters Prepared via Low-Temperature in Situ Dynamic Thermal Crystallization, *Nano Lett.* 10.1021/acs.nanolett.0c01550 (2020). **SCI Impact Factor = 11.189**
45. Y. Zhao, Z. Wang, L. Cai, **T.-H. Han**, A. Zhang, Q. Wu, R. Wang, T. Huang, P. Cheng, S.-Y. Chang, D. Bao, Z. Zhao, M. Wang, Y. Huang, Y. Yang, High Performance Indium-Gallium-Zinc Oxide Thin Film Transistor via Interface Engineering, *Adv. Funct. Mater.* 2003285 (2020) **SCI Impact Factor = 18.808**

44. S.-H. Jeong[†], J. Park[†], **T.-H. Han[†]([†]equal 1st author)**, F. Zhang, K. Zhu, J.-S. Kim, M.-H. Park, M. O. Reese, S. Yoo, T.-W. Lee, Characterizing the Efficiency of Perovskite Solar Cells and Light-Emitting Diodes, *Joule*, 4, 1004-1033 (2020). **SCI Impact Factor =41.248**
43. S.-H. Bae, D. Kim, S.-Y. Chang, J. Hur, H. Kim, J.-W. Lee, B. Zhu, **T.-H. Han**, C. Choi, D. L. Huffaker, D. D. Carlo, Y. Yang, Y. S. Rim, Hybrid Integrated Photomedical Devices for Wearable Vital Sign Tracking, *ACS Sens.* 5, 1582 (2020). SCI Impact Factor =7.711
42. S. Ahn[†], **T.-H. Han[†]([†]equal 1st author)**, K. Maleski, J. Song, Y.-H. Kim, M.-H. Park, H. Zhou, S. Yoo, Y. Gogotsi, T.-W. Lee, 2D Titanium Carbide MXene Flexible Electrode for High-Efficiency Light-Emitting Diodes, *Adv. Mater.* 202000919 (2020) In Press. **SCI Impact Factor = 30.849**
41. Y. Zhao, P. Zhu, M. Wang, S. Huang, Z. Zhao, S. Tan, **T.-H. Han**, J.-W. Lee, T. Huang, R. Wang, J. Xue, D. Meng, Y. Huang, J. Marian, J. Zhu, Y. Yang, A Polymerization-Assisted Grain Growth Strategy for Efficient and Stable Perovskite Solar Cells, *Adv. Mater.* 1907769 (2020). **SCI Impact Factor = 30.849**
40. S. Tan, I. Yavuz, N. De Marco, T. Huang, S.-J. Lee, C. S. Choi, M. Wang, S. Nuryyeva, R. Wang, Y. Zhao, H.-C. Wang, **T.-H. Han**, B. Dunn, Y. Huang, J.-W. Lee, Y. Yang, Steric Impediment of Ion Migration Contributes to Improved Operational Stability of Perovskite Solar Cells, *Adv. Mater.* 1906995 (2020). **SCI Impact Factor = 30.849**
39. H. Wang, Y. Zhao, Z. Wang, Y. Liu, Z. Zhao, G. Xu , **T.-H. Han**, J.-W. Lee, C. Chen, D. Bao, Y. Huang, Y. Duan, Yang Yang*, Hermetic seal for perovskite solar cells: An improved plasma enhanced atomic layer deposition encapsulation, *Nano Energy* 69, 104375 (2020). **SCI Impact Factor = 17.811**
38. **T.-H. Han***, J.-W. Lee, Y. J. Choi, C. Choi, S. Tan, Z. Dai, S.-J. Lee, O. Lin, L. Cai, D. Kim, Y. Yang, Surface-2D/ bulk-3D Hetero-phased Formamidinium Perovskite Nanograins for Long-term Stable Light-Emitting Diodes, *Adv. Mater.* 32, 1905674 (2020). **SCI Impact Factor = 30.849**
37. J. Xue, R. Wang, L. Chen, S. Nuryyeva, **T.-H. Han**, T. Huang, S. Tan, J. Zhu, M. Wang, Z.-K. Wang, C. Zhang, J.-W. Lee, Y. Yang, Small Molecule ‘Charge Driver’ Enables Perovskite Quantum Dot Solar Cells with Efficiency Approaching 13%, *Adv. Mater.* 1900111 (2019). **SCI Impact Factor = 30.849**
36. M.-H. Park, J. Park, J. Lee, H. S. So, H. Kim, S.-H. Jeong, **T.-H. Han**, C. Wolf, H. Lee, S. Yoo, T.-W. Lee, Efficient Perovskite Light-Emitting Diodes using Polycrystalline Core-Shell-Mimicked Nanograins, *Adv. Funct. Mater.* 29, 1902017 (2019). **SCI Impact Factor = 18.808**
35. S.-H. Jeong, H. Kim, M.-H. Park, Y. Lee, H.-K. Seo, **T.-H. Han**, S. Ahn, D. J. Kim, J.-M. Heo and T.-W. Lee, Ideal Conducting Polymer Anode For Perovskite Light-Emitting Diodes By Molecular Interaction Decoupling, *Nano Energy* 60, 324 (2019). **SCI Impact Factor = 17.811**
34. **T.-H. Han**, S. Tan, J. Xue, L. Meng, J.-W. Lee, Y. Yang, Interface and Defect Engineering for Metal Halide Perovskite Optoelectronic Devices, *Adv. Mater.* 1803515 (2019). **SCI Impact Factor = 30.849**
33. **T.-H. Han**, J.-W. Lee, C. Lee, S.-J. Lee, N. D. Marco, Y. Haung, H. Lee, Y. Yang, Perovskite-Polymer Composite Cross-linker Approach for Highly-stable and Efficient Perovskite Solar Cells, *Nature Commun.* 10, 520 (2019). **SCI Impact Factor = 14.919**
32. J.-W. Lee, I. Jeon, H. Lin, S. Seo, **T.-H. Han**, A. Anisimov, E. Kauppinen, Y. Matsuo, S. Maruyama, Y. Yang, Vapor-Assisted Ex-Situ Doping of Carbon Nanotube towards Efficient

- and Stable Perovskite Solar Cells, *Nano Lett.* 19, 4, 2223 (2018). **SCI Impact Factor = 11.711**
31. J.-W. Lee, Z. Dai, **T.-H. Han**, C. Choi, S.-Y. Chang, N. D. Marco, H. Zhao, Y. Huang and Y. Yang, *2D Perovskite Stabilized Phase-pure Formamidinium Perovskite Solar Cells*, *Nature Commun.* 9, 3021 (2018) **SCI Impact Factor = 14.919**
 30. I. Jeon, C. Delacou, H. Okada, G. E. Morse, **T.-H. Han**, Y. Sato, A. Anisimov, K. Suenaga, E. I. Kauppinen, S. Maruyama, Y. Matsuo *Polymeric Acid-doped Transparent Carbon Nanotube Electrodes in Organic Solar Cells with the Longest Doping Durability*, *J. Mater. Chem. A* 6, 14553-14559 (2018). **SCI Impact Factor = 12.732**
 29. J.-W. Lee, Z. Dai, C. Lee, H. M. Lee, **T.-H. Han**, N. D. Marco, O. Lin, C. S. Choi, B. Dunn, J. Koh, D. D. Carlo, and Y. Yang, *Tuning Molecular Interactions for Highly Reproducible and Efficient Formamidinium Perovskite Solar Cells via Adduct Approach*, *J. Am. Chem. Soc.* 140, 6317 (2018). **SCI Impact Factor = 15.419**
 28. S.-J. Kwon[†], **T.-H. Han**[†] ([†]equal 1st author), T. Y. Ko, N. Li, Y. Kim, D. J. Kim, S.-H. Bae, Y. Yang, B. H. Hong, K. S. Kim, S. Ryu and T.-W. Lee, *Extremely Stable Graphene Electrodes Doped with Macromolecular Acid*, *Nature Commun.* 9, 2037 (2018). **SCI Impact Factor = 14.919**
 27. S.-J. Kwon[†], **T.-H. Han**[†] ([†]equal 1st author), Y.-H. Kim[†], T. Ahmed, H.-K. Seo, H. Kim, D. J. Kim, W. Xu, B. H. Hong, J.-X. Zhu, and T.-W. Lee, *Solution-Processed n-Type Graphene Doping for Cathode in Inverted Polymer Light-Emitting Diodes*, *ACS Appl. Mater. Interfaces* 10, 4874-4881 (2018). **SCI Impact Factor = 9.229**
 26. **T.-H. Han**, H. Kim, S.-J. Kwon, T.-W. Lee, *Graphene-based Flexible Electronic Devices*, *Mater. Sci. Eng. R Rep.*, 118, 1-43 (2017). **SCI Impact Factor = 36.214**
 25. S.-H. Jeong, S.-H. Woo, **T.-H. Han**, M.-H. Park, H. Cho, Y.-H. Kim, H. Cho, H. Kim, S. Yoo, T.-W. Lee, *Universal High Work Function Flexible Anode for Simplified ITO-Free Organic and Perovskite Light-Emitting Diodes with Ultra-High Efficiency*, *NPG Asia Mater.* 9, e411 (2017). **SCI Impact Factor = 10.481**
 24. H.-K. Seo, H. Kim, J. Lee, M.-H. Park, S.-H. Jeong, Y.-H. Kim, S.-J. Kwon, **T.-H. Han**, S. Yoo and T.-W. Lee, *Efficient Flexible Organic/Inorganic Hybrid Perovskite Light-Emitting Diodes Based on Graphene Anode*, *Adv. Mater.* 29, 1605587 (2017). **SCI Impact Factor = 30.849**
 23. S. Ahn[†], S.-H. Jeong[†], **T.-H. Han**[†] ([†]equal 1st author), T.-W. Lee, *Conducting Polymers as Anode Buffer Materials in Organic and Perovskite Optoelectronics*, *Adv. Opt. Mater.* 5, 1600512 (2017). **SCI Impact Factor = 9.926**
 22. **T.-H. Han**, M.-R. Choi, C.-W. Jeon, Y.-H. Kim, S.-K. Kwon, T.-W. Lee, *Ultra-high Efficiency Solution-Processed Simplified Small-Molecule Organic Light-Emitting Diodes Using Universal Host Materials*, *SCIENCE Adv.* 2, e1601428 (2016). **SCI Impact Factor = 14.136**
 21. **T.-H. Han**, M.-H. Park, S.-J. Kwon, S.-H. Bae, H.-K. Seo, H. Cho, J.-H. Ahn, T.-W. Lee, *Approaching Ultimate Flexible Organic Light-Emitting Diodes Using Graphene Anode*, *NPG Asia Mater.* 8, e303 (2016). **SCI Impact Factor = 10.481**
 20. J. Lee[†], **T.-H. Han**[†] ([†]equal 1st author), D. Y. Jung, J. Seo, H.-K. Seo, H. Cho, M.-H. Park, E. Kim, J. Chung, S.-Y. Choi, T.-S. Kim, T.-W. Lee, S. Yoo, *Synergetic Electrode Architecture for Efficient Graphene-based Flexible Organic Light Emitting Diodes*, *Nature Commun.*, 7, 11791 (2016). **SCI Impact Factor = 14.919**

19. **T.-H. Han**, S.-J. Kwon, N. Li, H.-K. Seo, W. Xu, K. S. Kim, T.-W. Lee, *Versatile p-Type Chemical Doping to Achieve Ideal Flexible Graphene Electrodes*, **Angew. Chem. Int. Ed.**, 55, 6197-6201 (2016) **SCI Impact Factor = 15.336**
18. H. Cho, S.-H. Jeong, S.-Y. Min, **T.-H. Han**, M.-H. Park, Y.-H. Kim, W. Xu, T.-W. Lee, *Scalable Noninvasive Organic Fiber Lithography for Large-Area Optoelectronics*, **Adv. Opt. Mater.**, 4, 967-972 (2016). SCI Impact Factor = 9.926
17. **T.-H. Han**, Y.-H. Kim, W. Song, T.-W. Lee, *Synergetic Influences of Mixed-Host Emitting Layer Structures and Hole Injection Layers on Efficiency and Lifetime of Simplified Phosphorescent Organic Light-Emitting Diodes*, **ACS Appl. Mater. Interfaces**, 8, 6152-6163 (2016). SCI Impact Factor = 9.229
16. **T.-H. Han**, S.-J. Kwon, H.-K. Seo, T.-W. Lee, *Controlled Surface Oxidation of Multi-Layered Graphene Anode to Increase Hole Injection Efficiency in Organic Electronic Devices*, **2D Mater.** 3, 014003 (2016). SCI Impact Factor = 7.103
15. **T.-H. Han**, S.-H. Jeong, Y. Lee, H.-K. Seo, S.-J. Kwon, M.-H. Park, T.-W. Lee, *Flexible Transparent Electrodes for Organic Light-Emitting Diodes*, **J. Inf. Disp.** 16, 71-84 (2015). SCI impact factor= 2.913
14. M.-H. Park, **T.-H. Han**, Y.-H. Kim, S.-H. Jeong, Y. Lee, H. Cho, T.-W. Lee, *Flexible Organic Light-Emitting Diodes for Solid-State Lighting*, **J. Photon. Energy** 5, 053599 (2015). SCI impact factor= 1.836
13. M.-H. Park, J.-Y. Kim, **T.-H. Han**, T.-S. Kim, H. Kim, T.-W. Lee, *Flexible Lamination Encapsulation*, **Adv. Mater.**, 27, 4308-4314 (2015). **SCI Impact Factor = 27.398**
12. **T.-H. Han**, W. Song, T.-W. Lee, *Elucidating the Crucial Role of Hole Injection Layer in Degradation of Organic Light-Emitting Diodes*, **ACS Appl. Mater. Interfaces**, 7, 3117-3125 (2015). SCI Impact Factor = 9.229
11. H. Cho, S. D. Kim, **T.-H. Han**, I. Song, J.-W. Byun, Y.-H. Kim, S. Kwon, S.-H. Bae, H. C. Choi, J.-H. Ahn, T.-W. Lee, *Improvement of Work Function and Hole Injection Efficiency of Graphene Anode Using CHF₃ Plasma Treatment*, **2D Mater.** 2, 014002 (2015). SCI Impact Factor = 7.140
10. T. Giridhar[†], W. Cho[†], Y.-H. Kim[†], **T.-H. Han**, T.-W. Lee* and S.-H. Jin, *A Systematic Identification of Efficiency Enrichment between Thiazole and Benzothiazole Based Yellow Iridium(III) Complexes*, **J. Mater. Chem. C** 2, 9398-9405, (2014). SCI Impact Factor = 7.393
9. T. Giridhar[†], **T.-H. Han**[†] (**†equal 1st author**), W. Cho, C. Saravanan, T.-W. Lee, and S.-H. Jin, *An Easy Route to Red Emitting Homoleptic Ir Complex for Highly Efficient Solution-Processed Phosphorescent Organic Light-Emitting Diodes*, **Chem. Eur. J.** 20, 8260-8264 (2014). (**Frontispiece cover**) SCI Impact Factor = 5.236
8. Y.-H. Kim, **T.-H. Han**, H. Cho, S.-Y. Min, C.-L. Lee, and T.-W. Lee, *Polyethylene Imine as an Ideal Interlayer for Highly Efficient Inverted Polymer Light-Emitting Diodes*, **Adv. Funct. Mater.** 24, 3808-3814 (2014). **SCI Impact Factor = 18.808**
7. H. Kim, S.-H. Bae, **T.-H. Han**, K.-G. Lim, J.-H. Ahn T.-W. Lee, *Organic Solar Cells Using CVD-grown Graphene Electrodes*, **Nanotechnology** 25, 014012 (2014). SCI Impact Factor = 3.874
6. **T.-H. Han**, Y.-H. Kim, H. Cho, T. Lim, and T.-W. Lee, *Flexible Electrodes for Organic Light-Emitting Diodes*, **Information Display**, 14, 31-44 (2013)

5. **T.-H. Han**, M.-R. Choi, S.-H. Woo, S.-Y. Min, C.-L. Lee and T.-W. Lee, *Molecularly Controlled Interfacial Layer Strategy Toward Highly Efficient Simple-Structured Organic Light-Emitting Diodes*, **Adv. Mater.** 24, 1487-1493 (2012). **SCI Impact Factor = 30.849**
4. **T.-H. Han**, Y. Lee, M.-R. Choi, S.-H. Woo, S.-H. Bae, B. H. Hong, J.-H. Ahn and T.-W. Lee, *Extremely Efficient Flexible Organic Light-Emitting Diodes with Modified Graphene Anode*, **Nature Photon.** 6, 105-110 (2012). **SCI Impact Factor = 38.771 (cited 1316 times)**
- **Highlighted in Nature Photonics: News and Views**, Y. Zhu and J. M. Tour, *Organic light-emitting diodes: Non-oxide boost*, **Nature Photon.** 6, 72-73 (2012).
3. M.-R. Choi, **T.-H. Han**, K.-G. Lim, S.-H. Woo, D. H. Huh, and T.-W. Lee, *Soluble Self-Doped Conducting Polymer Compositions with Tunable Work Function as Hole Injection/Extraction Layers in Organic Optoelectronics*, **Angew. Chem. Int. Ed.** 50, 6274-6277 (2011). **SCI Impact Factor = 15.336**
2. S.-J. Byun, H. Lim, G.-Y. Shin, **T.-H. Han**, S. H. Oh, J.-H. Ahn, H. C. Choi, T.-W. Lee, *Graphenes Converted from Polymers*, **J. Phys. Chem. Lett.**, 2, 493-497 (2011). **SCI Impact Factor = 6.475**
1. M.-R. Choi, S.-H. Woo, **T.-H. Han**, K.-G. Lim, S.-Y. Min, W. M. Yun, O. K. Kwon, C. E. Park, K.-D. Kim, H.-K. Shin, M.-S. Kim, T. Noh, J. H. Park, K.-H. Shin, J. Jang, and T.-W. Lee, *Polyaniline-Based Conducting Polymer Compositions with a High Work Function for Hole-Injection Layers in Organic Light-Emitting Diodes: Formation of Ohmic Contacts*, **ChemSusChem**, 4, 363-368 (2011). **(Inside cover) SCI Impact Factor = 8.928**