



김 현 민 책임연구원

Hyunmin Kim, PhD

Division of Biotechnology

Office: R2-403

Phone: +82-53-785-2553

Email: hyunmin.kim@dgist.ac.kr

Lab: Nonlinear optical science lab

Research Interests

- Super-resolution CRS (Coherent Raman scattering) chemical imaging
- Transient sum-frequency/second harmonic generation microscopy
- Ultrafast carrier dynamics of low dimensional materials
- Carrier interface diffusion

Education

- 2011: University of California-Irvine (Ph.D. in Physical Chemistry)
- 2003: UW-Madison (M.S. in Materials Science Program)
- 1997: POSTECH (B.S. in Materials Science Engineering)

Professional Experience

- 2019-Present: Principal Research Scientist, DGIST, Korea
- 2012-2019: Senior Research Scientist, DGIST, Korea
- 2012: Post doctor, KRICT, Korea
- 2009-2011: Post doctor, NIST, USA

Introduction to Research

Recently, the imaging science has garnered a keen attention, critically offering additional appreciation on various already valued optical spectroscopy in a spatially-resolved fashion. Further, with advancement of the laser technology, such imaging capability of the nonlinear optical spectroscopy drastically spans its realm over commonly used chemical analytic tools such as UV-VIS, Raman and fluorescence spectroscopy while offering profuse information regarding non-label chemical contrast, quantitative energy transfer, momentary light generation and ultrafast life time of electrons/holes in materials. We critically investigate these information by optimizing the data collecting condition through the cutting-edge multi-modal nonlinear optical imaging systems.

Research Publication (selected)

1. Nimbalkar, A.R., Kim, H.*, Opportunities and Challenges in Twisted Bilayer Graphene, *Nano-Micro Lett* 12, 126 (2020)
2. Kim, Y., Kim, H.*, Jang, H., Ahn, J.-H., Lee, J.D., Dual Resonant Sum Frequency Generations from Two-Dimensional Materials, *Nano Lett* 20, 4530, (2020)
3. Kim, J.-H., Le, Q.V., Nguyen, T.P., Lee, T.H., Jang, H.W., Yun, W.S., Jeong, S.M., Lee, J.D., Kim, S.Y.*, Kim, H.* Graphene-mediated enhanced Raman scattering and coherent light lasing from CsPbI₃ perovskite nanorods, *Nano Energy* 70, 104497 (2020)
4. Dhakal, K.P.†, Kim, H.†*, Lee, S.W., Kim, Y.J., Lee, J.D.*, Ahn, J.-H.* Probing the Upper Band Gap of Atomic Rhenium Disulfide Layers, *Light Sci App* 7, 98 (2018)
5. Jang, H., Dhakal, K.P., Joo, K.-I., Yun, W.S., Shinde, S.M., Chen, X., Jeong, S.M., Lee, S.W., Lee, Z., Lee, J.D., Ahn, J.-H.*, Kim, H.* Transient SHG imaging on ultrafast carrier dynamics of MoS₂ nanosheets, *Adv Mater* 30, 1705190 (2018)

Awards & Honors (selected)

1. Research excellence award, DGIST (2019)
2. This year's person, Issue maker, Korea (2018)
3. Dissertation fellowship, UCI Chemistry (2008)

Website:

<https://scholar.google.com/citations?user=OIF2plIAAAAJ&hl=en&oi=ao>