Dehui Wan

• Education

National Taiwan University; Taiwan (2004-2010)
Doctor of Philosophy in Material Science and Engineering

National Taiwan University; Taiwan (2003-2004)
Master of Science in Material Science and Engineering

National Taiwan University; Taiwan (1999-2003)
Bachelor of Science in Chemistry

• Professional Career

Associate Professor (2017-present)
Institute of Biomedical Engineering, National Tasing Hua University, Taiwan

Assistant Professor (2013-2017)
Institute of Biomedical Engineering, National Tasing Hua University, Taiwan

Postdoctoral Fellow (2011-2012)
Department of Biomedical Engineering, Georgia Institute of Technology, Atlanta, GA

Postdoctoral Associate (2010)
Institute of Biomedical Engineering, National Tasing Hua University, Taiwan

• Honors

- 「106年度李昭仁教授生醫工程年輕學者獎」(2016)
- Young Investigator Award, National Tsing Hua University, Taipei, Taiwan (2016)
- Young Investigator Award, College of Engineering, National Tsing Hua University, Taipei, Taiwan (2016)

• Selected Recent Publications

1. W.-L. Wan, B. Tian, Y.-J. Lin, C. Korupalli, M.-Y. Lu, Q. Cui, Dehui Wan, Y. Chang, H.-W. Sung Photosynthesis-inspired H2 generation using a chlorophyll-loaded liposomal nanoplatform to detect and scavenge excess ROS. *Nature Communications.* **2020**, 11, 534.
2. S.-J. Kuo, S.-W. Chang, Y. Y. Hui, O. Y. Chen, Y.-W. Chen, C.-C. Lin, Dehui Wan, H. Chen, H.-C. Chang Fluorescent microdiamonds conjugated with hollow gold nanoparticles as photothermal fiducial markers in tissue. *Journal of Materials Chemistry C.* **2019**. 7, 15197-15207 (2019 Journal of Materials Chemistry C HOT Papers).
3. S.-Y. Tseng, S.-Y. Li, S.-Y. Yi, A. Y. Sun, D.-Y. Gao, Dehui Wan* Food Quality Monitor: Paper-Based Plasmonic Sensor s Prepared Through Reversal Nanoimprinting for Rapid Detection of Biogenic Amine Odorants. *ACS Applied Materials and Interfaces.* **2017**, 9, 17306-17316.
4. L. Wang, Y. Chen, H. Y. Lin, Y.-T. Hou, L.-C. Yang, A. Y. Sun, J.-Y. Liu, C.-W. Chang, Dehui Wan* Near-IR-Absorbing Gold Nanoframes with Enhanced Physiological Stability and Improved Biocompatibility for In Vivo Biomedical Applications. *ACS Applied Materials and Interfaces.* **2017**, 9, 3873-3884.
5. S. H. Tsao, Dehui Wan*, Y.-S. Lai, H.-M. Chang, C.-C. Yu, K.-T. Lin, H.-L. Chen White Light–Induced Collective Heating of Gold Nanocomposite/B. mori Silk Thin Films with Ultrahigh Broadband Absorbance. *ACS Nano.* **2015**, 9, 12045-12059.

Plasmonic Nanomaterials for Sensing Technology and Cancer Therapy

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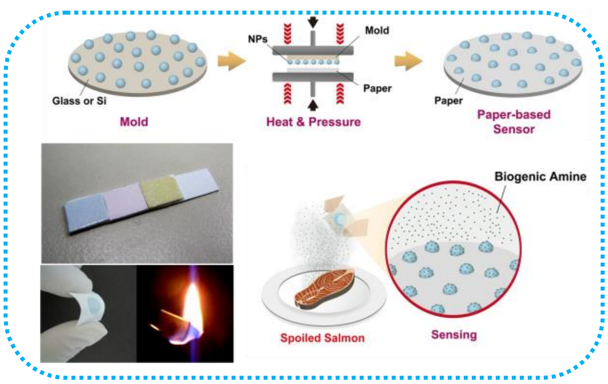
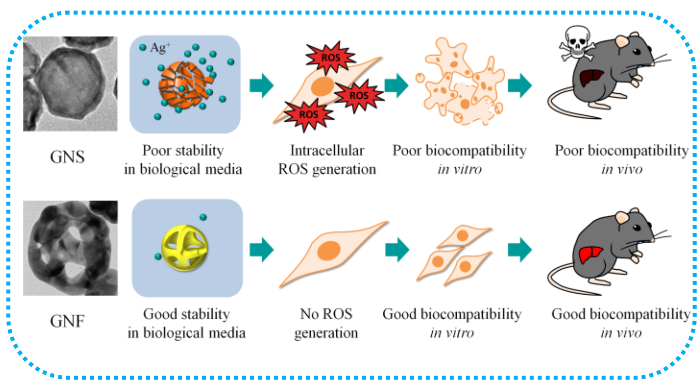
Plasmonic metal nanostructures (*e.g.*, Au, Ag) have proven to be a versatile platform for a broad range of optical applications. They are attractive for their surface plasmon resonance (SPR) properties. In this talk, I will introduce our recent work on the fabrication of hollow metal nanostructures, and their biomedical applications. First part illustrates a cost-effective plasmonic refractometric sensor through the deposition of hollow gold NPs (HGNs) onto flexible substrates (e.g., paper, PET, PTFE) using reversal nanoimprint lithography or self-assembly. The NP-deposited sensors can serve as gas sensors for the detection of volatile biogenic amines (BAs) released from spoiled food. Commercial flexible substrates were employed as sensor substrates providing significant optical signals for reflection-mode plasmonic refractometric sensing and high particle density, respectively; in addition, because substrates have low cost, light weight and flexibility, they are especially suitable for developing portable, disposable, cost-effective, eco-friendly sensing platforms. The second part describes the synthesis of near-infrared (NIR)-absorbing gold nanoframes (GNF), and a systematically comparative study of their physiological stability and biocompatibility with hollow Au-Ag nanoshells (GNS). The GNF exhibited a robust spherical skeleton composed of a few thick rims, and still preserved distinctive LSPR absorbance in NIR region, where the Ag content within the skeleton were significantly reduced to only 10 wt%, which was 4-folds lower than that of the GNS. Our result reveals that GNF have great potential to serve as a stable, biocompatible NIR-light absorber for *in vivo* applications, such as cancer detection and combination therapy.





References

1. S.-Y. Tseng, S.-Y. Li, S.-Y. Yi, A. Y. Sun, D.-Y. Gao, Dehui Wan. *ACS Applied Materials and Interfaces,* **2017**, *9*, 17306-17316.
2. L. Wang, Y. Chen, H. Y. Lin, Y.-T. Hou, L.-C. Yang, A. Y. Sun, J.-Y. Liu, C.-W. Chang, Dehui Wan. *ACS Applied Materials and Interfaces*, **2017**, *9*, 3873-3884.
3. S. H. Tsao, Dehui Wan, Y.-S. Lai, H.-M. Chang, C.-C. Yu, K.-T. Lin, H.-L. Chen. *ACS Nano,* **2015**, *9*, 12045-12059.