

Yuanyang Xie

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My research endeavors are primarily focused on the optical performance of heterogeneous plasmonics and chiral plasmonics, especially the plasmonic gold nanostructures. I have experience in plasmonics nanostructure fabrications, photocatalysis, electromagnetic numerical simulations, Fourier microscopy measurements and pump-probe measurements, and I am personally interested in the chiral light-matter interactions of plasmonics and its applications in photocatalysis.

Highlight Skills

- **Optical analysis and application:** Photocatalysis, tunnelling emission, Fourier microscopy, pump-probe spectroscopy, circular dichroism spectroscopy, Raman spectroscopy, and sensor design in colorimetry.
- **Nanofabrication:** Wet-chemical fabrications including chiral gold nanoparticles and multishell Au-SiO₂ nanoparticles, atomic layer deposition, thermal evaporator, and monolayer particle assembly and transfer, SEM/TEM characterization.
- **Numerical Simulation:** COMSOL

Work experience

- **King's College London** | *Postdoctoral Researcher* |
Department of Physics [2024.10 – to now]
New perspectives in photocatalysis and near-surface chemistry: catalysis meets plasmonics

Education

- **King's College London** | *PhD in Physics* |
Department of Physics 2020.10-2024.12
Focus on the optical performance of plasmonic heterogeneous nanostructures, including chiral plasmonics and chiral photocatalysis.
- **Chinese Academy of Science** | *Master's degree in Environmental Engineering* |
Chongqing Institute of Green and Intelligent Technology 2016.09-2019.06
Focus on creating colorimetric methods for detecting environmental pollutants based on plasmonics.
- **Northwest university, Xi'an** | *Bachelor's degree in Environmental Science* |
College of Urban and Environmental Sciences 2012.09-2016.06

Publications

Highlight journal papers:

- **Yuanyang Xie**, et al., Unidirectional Chiral Scattering from Single Enantiomeric Plasmonic Nanoparticles. *Nature Communications*, 2025, 16(1):1125.
- Anton Yu. Bykov^{†*}, **Yuanyang Xie^{†*}**, et al., Broadband Transient Response and Wavelength-Tunable Photoacoustics in Plasmonic Hetero-nanoparticles. *Nano letters* 23.7 (2023): 2786–2791.
- **Yuanyang Xie**, et al., A Trigger-based Aggregation of Aptamer-functionalized Gold nanoparticles for Colorimetry: An Example on Detection of Escherichia Coli O157: H7. *Sensors and Actuators B: Chemical* 339 (2021): 129865.
- **Yuanyang Xie**, et al., A Competitive Colorimetric Chloramphenicol Assay Based on the Non-cross-linking Deaggregation of Gold Nanoparticles Coated with a Polyadenine-modified Aptamer. *Microchimica Acta* 185.12 (2018): 1-9.
- **Yuanyang Xie**, et al., Sensitive Colorimetric Detection for Lysozyme Based on the Capture of a Fixed Thiol-aptamer on Gold Nanoparticles. *New Journal of Chemistry* 43.11 (2019): 4531-4538.

Highlight Conference:

- **Yuanyang Xie**, et al., Wavelength-tuneable Photoacoustics in Plasmonic Au/SiO₂/Au Nanoparticles. Nanophotonics IX. **SPIE Photonics Europe**, 2022. (talk)
- **Yuanyang Xie**, et al., Wavelength-selective Photoacoustics in Plasmonic Hetero-nanoparticles. **PIERS**, 2023. (talk)
- **Yuanyang Xie**, et al., Rotating chiral dipoles for unidirectional scattering. Nanophotonics IX. **SPIE Photonics Europe**, 2024. (talk)
- **Yuanyang Xie**, et al., Chiral plasmonics. Centre For Biomolecular Spectroscopy Symposium, 2024, London, United Kingdom. (Invited Talk)
- **Yuanyang Xie**, et al., Unidirectional Scattering from Chiral Plasmonic Nanoparticles. In *The 11th International Conference on Surface Plasmon Photonics (SPP11)*, Tokyo, Japan, 2025. (talk)