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-SiO_2 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 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/SiO_2/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**)