Youlin Liu

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🌐 https://yliu0593.github.io/about/

Education

Purdue University	**West Lafayette, Indiana**
PhD in Chemistry (expected)	*09/2016–present*
University of Science and Technology of China (USTC)	**Hefei, China**
Bachelor of Science, Chemistry	*09/2012–06/2016*

Work Experience

Simpson Lab of Nonlinear Optics, Purdue University — **West Lafayette, the US**
Graduate Researcher — *10/2016–present*

Hyperspectral infrared imaging microscope design and digital image analysis
Building of a hyperspectral microscope: co-propagation with a visible light source to achieve higher resolution images with IR information
o Aligning optical elements for the microscope
o Electronic control of the beam-scanning set-up with Alazar digitization cards and Labview control
o Image analysis methods: watershed algorithm for segmentation, shallow neural network for spectral classification
Adversarial spectroscopy: computational methods for testing robustness of linear classification algorithms
o Modified and optimized the genetic algorithm, particle swarm algorithm for the adversarial purpose
o Wrote the traditional statistical probability calculation into function to aid classification analysis
Molecular level protein interaction modeling with experimental observables
o Building of an artificial neural network as a regression model to link DLVO theoretical physical parameters to observables accessible via FRAP (Using tensorflow Keras, model under development)
Synchrotron X-ray damage analysis with non-negative matrix factorization
o Performed X-ray diffraction experiments at Argonne National Laboratory
o Indexing the peaks with XDS, HKL2000

DNA-Enabled-Nano-Group, USTC — **Hefei, China**
Undergraduate Researcher — *05/2015–06/2016*

Inorganic synthesis method optimization of gold dimers for SERS

o Optimization of reaction time, dosage, coating type
o Characterization methods: DLS, UV-Vis, gel electrophoresis, Raman spectroscopy

Mesoscale Chemical Systems, University of Twente — **Enschede, The Netherlands**
Research Intern — *06/2015–08/2015*

Sonochemical effects analysis with microfluidic sonochemical reactor

o Designed and conducted experiments to analyze sonochemical effects with chemiluminescence.
o Design mechanical solutions for experimental reproducibility
o Statistical significance analysis for large amount of data
o Use SEM for surface analysis

Environmental Engineering Laboratory, USTC — **Hefei, China**
Undergraduate Researcher — *01/2014-04/2015*

SeCd Quantum dots detoxification analysis in C. elegans

o Toxicity analysis with SeCd forming to quantum dots within C. elegans
o Characterization methods: HPLC, fluorescence microscopy,
o Maintenance of C. elegans in the laboratory