



Name: Haining Li



Educational Background

- 2020.9-2023.6 Master candidate at Northwest University (major in Biological Resources Chemistry and Utilization)
The curriculum included: Biostatistics & Data analysis, Functional Proteomics, Molecular Biology, Organic Chemistry, Inorganic chemistry, and Spectrum analysis.
- 2012.9-2016.7 Qiqihar University Undergraduate (major in Light Chemical Engineering)
The curriculum included: organic chemistry, inorganic chemistry, probability theory, mathematical statistics, physical chemistry, dye chemistry, fiber chemistry, chromatographic analysis, linear algebra, university English, Photoshop, Origin, etc.



Areas of study

- Immobilized DMAP with sorbitol as a branching agent was successfully prepared by me, and the loading of DMAP and activity were investigated. Compared with the DMAP loading of individual immobilized DMAP, the loading of immobilized DMAP with sorbitol as a branching agent was significantly increased (about 5.3 times), and its activity was 7.7 times. Immobilized DMAP with sorbitol as a branching agent also had the advantages of easy separation and no residue in the product compared with free DMAP. Therefore, immobilized DMAP with sorbitol as a branching agent has excellent prospects for industrialization.
- Sorbitol was used as the grafting agent and nano-silica as the optimal carrier to investigate the effect of amplifying the surface hydroxyl group of the carrier to increase the loading of DMAP by hyper-grafting technique. After grafting the sorbitol onto the nano-silica, the surface hydroxyl content reached 8.89 mmol/g. Then the loading amount was 5.17 mmol/g after chloroalkylation conversion and N-alkylation loading of DMAP with nano silica as the carrier by sorbitol hyperbranched loading. Meanwhile, the prepared hyperbranched loaded DMAP catalyst was applied to the acylation-indicating reaction of vitamin E and acetic anhydride, and its activity and stability were evaluated and investigated.
- The effects of different carrier types on the performance of loaded catalysts were investigated. The N-alkylation reaction with sorbitol grafting on nano-silica (NS) as a carrier resulted in a DMAP loading of 3.37 mmol/g, the N-alkylation reaction with spherical silicone as a carrier resulted in a DMAP loading of 3.78 mmol/g, and the N-alkylation reaction with sorbitol grafting on an MCM-41 resulted in a DMAP loading of 4.31 mmol/g. Although the loading of molecular sieves as carriers was better than that of nano-silica, the change in specific surface area and pore size also affected the mass transfer resistance in the actual reactions. Pyridine-functional groups mainly concentrate on the surface due to NS's small pore-size structure. The other two carriers also affect the acetylation reaction to some extent due to the variation of their pore structure. Nano-silica as a carrier has proved to be effective in practice.
- Lysophosphatidylcholine-DHA (LPC-DHA), a complex of lysophosphatidylcholine (LPC) and DHA, combines the excellent properties of both LPC and DHA. Currently, the main methods of phospholipid modification are physical modification, chemical modification, and enzyme modification. Among them, physical modification has the limitation of not being able to improve the functionality of phospholipids according to demand. In contrast, in enzyme modification, the enzymes are quickly inactivated, and the reaction temperature, pH, and other conditions must be well controlled. The enzymes are expensive, not readily available, and not easily preserved. After several optimizations of the LPC-DHA synthesis process in the middle stage, the best synthetic route and the maximum synthetic yield were obtained. The green processing is currently underway, and the LPC-DHA is planned to be made into a capsule product.
- Efficient and green synthesis of biodiesel from crude oil without degumming catalyzed by sodium carbonate supported MoS₂



Research Skills

- I am very familiar with the principles and use of standard analytical equipment such as Fourier transform infrared spectroscopy, Thermal Gravimetric Analyzer, Automated Surface Area and Porosity Analyzer, Gas Chromatograph, Liquid Chromatograph, Liquid Chromatograph-Mass Spectrometer, Gas Chromatograph-Mass Spectrometer.
- I can use Excel, Photoshop, Origin, GetData Graph Digitizer, and Gel-Pro analyzer. I am also learning other data processing software on the website outside of school hours.
- I am fluent in English and have written all three of my current SCI papers independently, except for professional corrections from my supervisor. I have also been practicing my spoken English recently and have basic communication skills.



Academic Thesis

- Zhang T, Li B, **Li H**, et al. Efficient and green synthesis of biodiesel from crude oil without degumming catalyzed by sodium carbonate supported MoS₂ [J]. RSC Advances,2022,12,24456-24464.
- **Li H**, Zhang T, Tang K, et al. Preparation of hyperbranched 4-dimethylaminopyridine catalyst for the efficient synthesis of vitamin E succinate[J]. Comptes Rendus Chimie (accepted)
- **Li H**, Zhang T, Wei L, et al. Immobilized 4-dimethylaminopyridine with sorbitol as branching agent and application in the production of vitamin E acetate. (under review)
- **Li H**, Zhang T, Tang K, et al. The effect of carrier type on the performance of high-volume loaded DMAP catalysts and their successful application to the catalytic synthesis of tocopheryl acetate. (under review)
- Qi X, **Li H**, Guo M, et al. Traditional Chinese Herbal and Derivatives Against the PLpro of SARS-CoV-2 via High Throughput Screening, ADMET Analysis.(under review)



Honors and Awards

Postgraduate stage

2020-2021, Second-Class Scholarship for Freshmen

2021-2022, Second-Class Scholarship

Undergraduate stage

2014-2015, I won the National Encouragement Scholarship, the First-Class Scholarship, and the honorary title of Merit Student Model.

2013-2014, I won the National Encouragement Scholarship, the Second-Class Scholarship, and the honorary titles of Study Style Construction Advanced Individual and Excellent League Member.

2012-2013, I won the Second-Class Scholarship for Freshmen.



Contact Information

- Address: Tai Bai Bei Road 229, Northwest University, Xi' an, Shaanxi 710000, China
- Phone number: +86 15929781586
- Email: lihaining1369@126.com