

## Mr. Zhexu Xi

### Education Background

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08/2014-06/2018 Xiamen University

**Major: Chemistry**

- Member of Top-notch Plan in Chemistry(electing 30 people with academic understanding and learning ability from 170).
- Member of Breeding Funding in Training Base of Chemical Talents(electing the minorities fond of and skillful at experiments).
- Successfully starting an innovation R&D team and winning a patent for invention.
- Successfully running an academic club in the field of Bioinformatics.
- One of the few undergraduates majoring in Chemistry to participate in international meetings.

### Main researching interest

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- 1 Controllable/Tunable synthesis and characterization
  - 2 Functional Material, especially photoelectric or magnetic material
  - 3 Assembled behavior, containing self-assemblies
  - 4 Microconformation control of materials
  - 5 Dynamic interfacial chemistry
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### Main researching experiences

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- 1 Synthesis, modification and characterization of a green adhesive-based material
  - 2 Construction and structural optimization of a kind of aromatic fused-ring assemblies
  - 3 Structure and property prediction of synthetic functional proteins
  - 4 Simulation of enzyme-catalyzed bioreactions/chemreactions
  - 5 Instrumental optimal design
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### Completed core courses related to my interests

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Chemistry	Four major chemistry and its experiments and leading edge forum, biochemistry, structural chemistry, interface and colloid chemistry, supramolecular chemistry, calculating chemistry, organometallic chemistry, safety and environmental protection of chemical experiments, advanced inorganic/organic chemistry, molecular graphics, cheminformatics, polymeric chemistry, inorganic/organic synthetic chemistry, statistical thermodynamics, bio-macromolecular crystal structure analysis, chemical English, introduction of catalysis
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Material Science and Engineering	material testing method, material English, material surface engineering, crystallography, modern material engineering entrepreneurship training
Chemical Engineering	principle of chemical engineering, basic chemical engineering experiment, process control, enzyme engineering, membrane separation technique and its application, principle of separation engineering, bioinformatics, special topic of application in chemistry and chemical engineering, new separation technology of chemical engineering, fine chemical industry
Energy	Introduction of energy chemistry, energy chemical engineering, research progress of new energy, energy system engineering, leading edge forum of energy chemistry
Others	analog electronic technology, basis of data processing, signals and systems

### Professional Skills

- 1 Strong ability of document retrieval and information collection, like Endnote.
- 2 Capacity in molecular mechanics, graphics and molecular modeling, like Gaussianview, DS Viewerpro, Chemdraw and Hyperchem.
- 3 Strong ability of inspecting and predicting bioinformatic data.
- 4 Skills in material modeling, like Origin, Mathematica and Material Visualizer.
- 5 Basic skills in APP design, like Java.
- 6 Skillful at experimental ability, especially synthesis skills and properties inspection methods.
- 7 Good at communicating and interacting with excellent oral English.

### Papers

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| 06/2017 | <p><b>Analysis of Dehydration Mechanism of Winter Fruits at Constant Low Temperature Combined with Mathematical Modeling</b></p> <p>Abstract: The freshness and the quality of the fruit are closely linked with their moisture, and the stability of fruit's physical and chemical properties also have something to do with water activity. This article will depict a simplified fruit's structure from cell size and arrangement of apple samples by EM. Through comparison between biochemical experiments and mathematical modeling, we can reason a systemic mechanism on water diffusion of fruit in the constant low temperature.</p> |
| 09/2017 | <p><b>On the Value of Low Carbon Materials in Industrial Design in Circular Economy</b></p> <ul style="list-style-type: none"> <li>• Accepted in <i>China Creative Design Yearbook</i></li> </ul>  |

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	<p>2016-2017(ISBN:978-7-5624-7437-1) and will be published in the end of 2017.</p> <ul style="list-style-type: none"> <li>• Won the 2nd Prize for annual papers in <i>Yearbook</i>.</li> </ul>
11/2016-08/2017	<p><b>Synthesis and property of a new environmentally friendly cellulose-based adhesive substance</b></p> <p>Abstract: In order to meet the demand for low-carbon and high quality products' synthesis, the researches for cellulose-based adhesive substance have been studied recently due to its extraordinary features, such as high adhesive strength, few side effects, high degradability and excellent biocompatibility. This paper focuses on the sulfonation reaction of cellulose and explore a green synthetic method to obtain cellulose sulfate by stepwise modification and performance optimization.</p>
12/2017	<p><b>Regional Compartmentalization in Multi-enzyme Assembled System</b></p> <p>Abstract: Multi-enzyme cascade reactions are widely utilized because they can function well to generate value-added products from simple raw materials. However, how to promote the catalytic efficiency and synergistic effect of multienzyme system is proved to be a challengeable point. Recent discovery repeatedly emphasized the strategy of assembling multi-enzyme complexes or forming subcellular compartments for spacial optimization. This may contribute to various biochemical process as a highly ordered and tunable organization. On the basis of the feasibility of regional compartments for natural or artificial biochemical reactions in vivo and vitro, this dissertation focuses mainly on analysis and progresses in this cascaded strategy.</p>

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**Scientific Research Training Experience in Laboratory (Including Project Honours)**

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03/2017-Now	<p><b>Project Group under Prof. Zichao Tang, Xiamen University School of Chemistry and Chemical Engineering Instrumental Analysis Centre</b></p> <ul style="list-style-type: none"> <li>● Took part in Debugging and optimization of internal electromagnetic field conditions in development of mass spectrometry measurement and control system with Labview (e.g. ion source temperature design, boot-strap design, high and low voltage power supply control design and electronic control unit module design)</li> <li>● Material-informatic analysis in structures and properties of biomaterials.</li> </ul>
10/2016-05/2017	<p><b>Group Member, Project to Invent a New-type Mixed Gas Fuel Engine, Xiamen University</b></p>

07/2016-Now	<ul style="list-style-type: none"> <li>● Was responsible for determining the components of the gas (ammonia and natural gas) fuel from the angle of combustion efficiency and economic sustainability.</li> <li>● Analysed the exhausted NO<sub>x</sub> and CO<sub>x</sub> emissions with different proportions of pressure.</li> </ul> <p><b>Project Leader, Supramolecular and Photoelectric Material Project Group under Associate Prof. Xiaoyu Cao, Xiamen University School of Chemistry and Chemical Engineering</b></p> <ul style="list-style-type: none"> <li>● Research topic: Using 4,4'-bipyridine Attaching the Hydrophilic and Hydrophobic Groups to the Nitrogen Atoms Symmetrically at Both Ends as a Matrix to Polymerize a Cage Supramolecule by Fused-ring Stacking Force</li> <li>● Mastered the experimental skills of the controllable synthesis.</li> <li>● Learned the detecting methods of some photoelectric characteristic.</li> <li>● Understood the skills of designing a proper reaction route, optimizing the energy of the reaction system and stabilizing the supramolecular structure with certain tools before and after conceptual design.</li> <li>● Honours: major project in 8th Breeding Funding in Training Base of Chemical Talents in Xiamen University; University's Undergraduate Innovation and Entrepreneurship Program; Shortlisted entries in Challenge Cup</li> </ul>
04/2016-08/2017	<p><b>Project Founder and Manager , Bioinformatics Club, Xiamen University School of Chemistry and Chemical Engineering</b></p> <ul style="list-style-type: none"> <li>● Used bioinformatic methods or called relevant algorithm to retrieve the structures and properties of synthesized or successfully separated proteins. ( e.g. coil analysis, physical and chemical properties analysis,subcellar localization, transmembrane region prediction, hydrophobic analysis, signal peptide prediction and hierarchical structure prediction)</li> <li>● Communicated data with cell culture work in Programme IGEN (International Genetically Engineered Machine Competition), including cell environment simulation and relevant protein expression profiling summary analysis</li> <li>● Optimized prediction algorithm about protein information</li> <li>● Honour:a participation invitation to the Bioinformatics Symposium in Southern China</li> </ul>
04/2015-12/2015	<p><b>Project Founder and Manager, Xiamen University Faculty of Chemistry Laboratory Self-innovation Group Project(Docking with the Later Industrial Practice in Minyue)</b></p> <ul style="list-style-type: none"> <li>● Research Topic: Synthesizing a new kind of environmentally friendly and sustainable water-based adhesive (the final principal component: cellulose sulfate)</li> </ul>

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- Organized the component determination experiments and performance optimization experiments.
  - Mastered the key to green synthesis and skills of particulate modification and processing.
  - Took part in constant improvement in property inspection during adhesive-synthesized trials, like cohesional strength, film state and surface tension.
  - Honours: excellent in 2nd FIG Group Entrepreneurship Funding; programme qualification in 9th National University Innovation and Entrepreneurship Annual Meeting; top 100 programmes in 6th National Public Charity Programme Competition; Patent for Invention

#### **Specialized Production Practice Experience (Including Project Honours)**

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07/2017-08/2017	<b>Group Leader of Pesticide Detection and Food Stock Management Internship, Xiamen Entry-Exit Inspection and Quarantine Bureau</b> <ul style="list-style-type: none"> <li>● Made pre-processing of pesticide detection, sample test in lab.</li> <li>● Supervised the production line detection and coordinated the teamwork.</li> <li>● Unpacked and managed stocks of food according to testing index.</li> <li>● Honours: an internship certificate and a RL from my boss as a Food Analysis Laboratory Senior Engineer.</li> </ul>
06/2017	<b>2017 Chemistry R&amp;D Industry Summit Forum, Shanghai</b> <ul style="list-style-type: none"> <li>● Took part in the discussion of the relationship and application of industrial research, laboratory production and the technical research.</li> </ul>
02/2017-07/2017	<b>Internship in data group, Alibaba Cloud</b> <ul style="list-style-type: none"> <li>● Attended data group meeting and learn the inductive and analytical skills for different data on cloud platform.</li> <li>● Participated in and prepared for the API as a Service Competition as an internal test of comprehensive abilities.</li> <li>● Honours: Successfully Participating Prize in API as a Service Competition; Internship Volunteer certificate in API as a Service Competition in Alibaba Cloud</li> </ul>
10/2015-04/2017	<b>Internship with an original innovation, Fujian Minyue Paint &amp; Coating Co., Ltd. (Docking with the Early Trial in Lab)</b> <ul style="list-style-type: none"> <li>● Assisted in the mass run, property checking and industrial development of new water-based adhesive</li> <li>● Performed the pilot test and commercial test of the new type of adhesive.</li> <li>● Honours: a research internship certificate; certificate of product qualification</li> </ul>

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#### Academic Competition Experience (Including Project Honours)

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04/2017	<b>Assistant Guider in National Sides of Strait Youth Innovation Hackathon Competition</b> <ul style="list-style-type: none"> <li>● Leading topic: <i>APP Design in Nutritious Food Recommendation Automatically</i></li> <li>● Guidance in APP design, data analysis based on Java programming.</li> <li>● Instructions to sorting out information related to chemistry.</li> <li>● Honours: invitation to the Innovation Hackathon Competition; (as a team guider) Winning Prize in Programme Innovative City.</li> </ul>
08/2016	<b>Shenzhen Cup Mathematic Modelling Summer Camping</b> <ul style="list-style-type: none"> <li>● Led the group to write a paper <i>Analysis of the Running Stability of Bag Filter System in Incineration Plant</i></li> <li>● Designed the model of the filter system in high running efficiency</li> <li>● Was responsible for calculating microscopic absorption mechanism</li> </ul>

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04/2015-11/2015	<ul style="list-style-type: none"> <li>● Honour: 2nd Prize of outstanding papers in Shenzhen Cup National Students Mathematic Modelling Summer Camping</li> </ul> <p><b>Material-structural Modelling Group in 14th Challenge Cup AVIC National University Academic Extracurricular Competition</b></p> <ul style="list-style-type: none"> <li>● Research topic: Constructing and optimizing the titanium-nickel alloy structure in Finite Element Analysis to enhance its cushioning and compression performance.</li> <li>● Assisted in characterization of dynamic molecular interaction.</li> <li>● Made a comparison of Stress and recovery analysis of shear stress, strain rate effect and energy absorption as well as its deformation effects among common cushioning models like honeycomb structure, sponge structure and porous structure.</li> <li>● Honour: 2nd Prize on 14th Challenge Cup AVIC National University Academic Extracurricular Competition</li> </ul>
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### **Social Practice Experience (Including Project Honours)**

01/2017-02/2017	<b>Leader of Winter Social Research on how to Keep Freshness and Qualities of Fruits and Vegetables at low constant temperature, Xiamen University</b> <ul style="list-style-type: none"> <li>● Made a study on dehydration mechanism of apple samples in constant low temperature by both observation with EM and mathematical modeling and wrote a paper published in <i>Science &amp; Technology Industry Parks</i>.</li> <li>● Visited cooperatives and analysed modern quality guarantee instruments and technological methods.</li> <li>● Honour: an agreement of appointment of the National Youth Observer in Winter Event Chinese Good Netizen, Return for China</li> </ul>
06/2016-09/2016	<b>Leader of Summer Social Research on whether Qualities of Fruits and Vegetables are Green and Low-carbon, Xiamen University</b> <ul style="list-style-type: none"> <li>● Performed the investigational study and gave professional analysis in every link from samples production, processing, packaging to quality inspection.</li> <li>● Made experimental study and data analysis on exploring the major functional components (organophosphorus, organochlorine and Pyrethroids) and contents of pesticide residues in fruit samples</li> <li>● Write a paper on methods of formulation and combination of peptides</li> <li>● Honours: Excellent Team in 2016 Fujian Province University and College Students Social Event Three Goto Countryside; Excellent Team and Practical Activists in 2016 Xiamen University Social Event; 3rd Prize in the 3rd Energy Conservation Competition</li> </ul>

#### Other Abundant Certificates

2015	2015 Xiamen University Chemistry Subject Excellent Student Cultivating Plan Scholarship Chemistry Subject Scholarship CET-4
2016	Participation Certificate of Attending of the Supermolecule Forum in the University of Waterloo CET-6 3rd Prize in 2016 Xiamen University Summer Photographing Merit Certificate of Writing reporter in Chinese University Alliance Certificate of Volunteer Service of Heart to Heart Fund in CRCF
2017	Certificate of Summer Learning and Workshop Participation in University of Michigan Merit Certificate in Anhui University Student Drug-ban Knowledge Competition Merit Prize in Puyi Cup National University Student Translation Competition



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**Overseas Academic Experience**

08/2017	Attended Self-assembled Functional Materials Summer Workshop in University of Michigan with good performance evaluated by A
07/2016-08/2016	Attended Supramolecule Forum in the University of Waterloo with a topic lecture Polymeric Targeting Synthesis and Mechanism

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**Other Extra-curricular Participations**

12/2015-12/2016	Writing Reporter in Chinese University Alliance & College Students News Agency of China
2014-2017	Head member of Soprano in Choir of Xiamen University
2015-2016	Backbone in the Information Interviewing and Editing Department in Youth Media Center in Xiamen University
2014-2015	Backbone in the Femalestudent Department in College of Chemistry and Chemical Engineering in Xiamen University