

Curriculum Vitae

PERSONAL INFORMATION

Rong An

Assistant Professor

Prof. Harald Fuchs' Research Group

Herbert Gleiter Institute of Nanoscience, Department of Chemical & Biomolecular Engineering

Nanjing University of Science & Technology

Building 340, Xiaolingwei 200#, Nanjing 210094, Jiangsu Province, P.R.China

Mobile +86-15295701219

E-mail anronganrong@163.com, ran@njust.edu.cn

EDUCATION

July 2013 Ph.D. Chemical Engineering. Nanjing Tech University, Nanjing, China

Thesis: "Preparation of Mesoporous Titanium Dioxide Films and Study of the Surface Nano-frictional Properties"

June 2008 B.Sc. Environmental Engineering, Nantong university, Nantong, China

SKILLS

Atomic Force Microscopy (AFM), Field Emission Scanning Electron Microscopy (FESEM), Transmission electron microscopy (TEM), Energy-Dispersive X-ray spectroscopy (EDS), X-ray Diffraction (XRD), Raman spectroscopy, UV-Vis, FTIR, Ellipsometry, Profilometer, Thermogravimetric Analysis (TGA), BET

RESEARCH EXPERIENCE

- **October 2015-Present** **Assistant Professor in Prof. Harald Fuchs' Research Group, at Herbert Gleiter Institute of Nanoscience, Nanjing University of Science & Technology**
 - ✓ Explored nanofriction and proton transfer behavior of graphene
 - ✓ Studied nanofriction and glass transition of polymer films by using atomic force microscopy
 - ✓ Studied the adsorption and wetting behavior of Biomolecules and ionic liquids on mesoporous materials
 - ✓ Studied nonfouling properties of TiO₂ nanotubes

- **December 2013-October 2015** **Postdoc Researcher in Prof. Keith E Gubbins' group at North Carolina State University, Raleigh, NC, U.S.A.**
 - ✓ Explored nanofriction and adhesion behavior for varying polymer films on solid substrates
 - ✓ Examined the interactions between polymeric coatings and underlying surfaces by AFM
 - ✓ Investigated nanofriction, adhesive strength and wettabilities at liquid-solid interfaces
 - ✓ Correlated molecular interactions with AFM-measured friction, adhesion forces

- **October 2012** **Visitor at University of Washington, Seattle, WA, U.S.A**

- ✓ Studied the quantitative influence of surface roughness, chemical modification on nonfouling properties of polymer and inorganic films
- ✓ Visited Boeing Plant and Microsoft Corporation in Seattle
- **September 2008-July 2013 Ph.D student in Prof. Xiaohua Lu's group at Nanjing Tech University, Nanjing, China.**
- ✓ Synthesized lowly frictional TiO₂ films by constructing heterogeneous nanopores
- ✓ Studied ionic liquids friction, adhesion and wetting properties on mesoporous TiO₂ films and the influence to the ability of CO₂ capture
- ✓ Tuned protein-surface interactions to control protein adsorption on mesoporous TiO₂ surfaces
- ✓ Designed low friction mesoporous TiO₂ films to resist bacteria attachment, showing excellent self-cleaning (i.e. nonfouling) behavior
- ✓ Participated in the workshop between China and Sweden about biomethane technology and the cooperation

PROPOSAL EXPERIENCE

- January 2017-December 2019

PI of National Natural Science Foundation of China "The generalized description of Typical Protein Molecules Interaction with the Support Based on Atomic Force Microscopy"

- January 2016 - December 2017

PI of the Fundamental Research Funds for the Central Universities

- May 2012-May 2013

PI of Colleges and Universities in Jiangsu Province plans to the research and innovation "The Interfacial Transfer Influence on Mesoporous Titanium Dioxide Performance"

- May 2014

Assisted in writing research grants and gave some contributions to Prof. Keith E Gubbins in applying for the extension of the project "Collaborative Research: Confinement and Surface Effects on Heterogeneous Reactions with Diffusion in Nano-Porous Materials" and the application was awarded

- April 2013-October 2013

Provided all of AFM measured friction and adhesion forces information, and assisted Prof. Xiaohua Lu in applying the grant "Molecular Simulation in Meso-scale for the Controlling Mechanism of Surface Reaction and Transfer on Mesoporous TiO₂" and the application was awarded

LEADERSHIP EXPERIENCE

- January 2009-October 2013

AFM management and maintenance in Nanjing Tech University, attended the AFM training in Bruker Corporation in Beijing and Shanghai in China

- September 2010-October 2013

Coordinated seminars by overseas visitors and collaborators

- September 2008-September 2009

Lab manager, coordinate the group members to maintain equipment; AFM maintenance; organize the tourism and parties of the group, *win a prize the best crew award (for two times)*

TEACHING EXPERIENCE

- September 2014-December 2014
Mentored undergraduate students in working group
- March 2010-June 2013
Mentored undergraduate students in working group
- September 2009-June 2010
Information Retrieval Teaching Assistant

PUBLICATION AND PATENT

1. **Rong An**, Liangliang Huang, Yun Long, Berc Kalanyan, Xiaohua Lu, Keith E Gubbins, Liquid-Solid Nanofriction and Interfacial Wetting, **Langmuir**, 2016, 32(3): 743-750
2. **Rong An**, Wei Zhuang, Zhuhong Yang, Xiaohua Lu, Jiahua Zhu, Yanfang Wang, Yihui Dong, Nanhua Wu. Protein Adsorptive Behavior on Mesoporous Titanium Dioxide Determined by Geometrical Topography. **Chemical Engineering Science**, 2014, 117, 146-155
3. **Rong An**, Yudan Zhu, Nanhua Wu, Wenlong Xie, Jiawei Lu, Xin Feng, Xiaohua Lu. Wetting Behavior of Ionic Liquid on Mesoporous Titanium Dioxide Surface by Atomic Force Microscopy. **ACS Applied Materials & Interfaces**, 2013, 5, 2692-2698
4. **Rong An**, Qiuming Yu, Luzheng Zhang, Yudan Zhu, Xiaojing Guo, Shuangqin Fu, Licheng Li, Changsong Wang, Ximing Wu, Chang Liu, Xiaohua Lu. Simple Physical Approach to Reducing Frictional and Adhesive Forces on a TiO₂ Surface via Creating Heterogeneous Nanopores. **Langmuir**, 2012, 28, 15270-15277
5. Xiaohua Lu, **Rong An**, Chang Liu, Chao Ji, Zhuhong Yang, Shuangqin Fu, Changsong Wang, Method for the Preparation of Mesoporous TiO₂ Films on a Substrate. 2012, CN102534609B (**China patent, Authorized**)
6. Yihui Dong, **Rong An**, Wei Zhuang, Zhong Yao, Yudan Zhu, Chang Liu, Xiaohua Lu. Mesoporous TiO₂ with Different Selectivities of Protein Immobilization Performance. **Journal of Chemical Industry and Engineering (China)**, 2014, 65, 1750-1758
7. Wei Zhuang, Licheng Li, Jiahua Zhu, **Rong An**, Linghong Lu, Xiaohua Lu, Xinbing Wu, Hanjie Ying. Facile Synthesis of Mesoporous MoS₂-TiO₂ Nanofibres for Ultrastable Lithium Ion Battery Anodes. **ChemElectroChem**, 2015, 2, 374-381.
8. Wei Zhuang, Linjiao He, Jiahua Zhu, **Rong An**, Xinbing Wu, Liwen Mu, Xiaohua Lu, Linghong Lu, Xiaojing Liu, Hanjie Ying. TiO₂ Nanofibers Heterogeneously Wrapped with Reduced Graphene Oxide as Efficient Pt Electrocatalyst Supports for Methanol Oxidation. **International Journal of Hydrogen Energy**, 2015, 40, 3679-3688.
9. Xiaohua Lu, Hailong Liu, Changsong Wang, Wenjun Yao, **Rong An**, Zhuhong Yang. Method for the Production of a Heat-Resistant, IR Radiation Heat-Reflecting, and Energy-Saving Coating Material, 2009, CN101723707A (**China patent**)

MANUSCRIPT IN PREPARATION

1. **Rong An**, Liangliang Huang, Yihui Dong, Richard Spontak, Keith E Gubbins. The Role of Polymer-Substrate Interaction Strength in Polymer Films on Solid Substrates: the Glass Transition and Friction Force

ORAL PRESENTATION

1. **Rong An**, Christopher Hering, Keith E. Gubbins. Nanofriction and Glass Transition for Liquid and Polymer Films on Solid Substrates: The Role of Adsorbate-Substrate Interaction Strength. Intl. Graduate Research Training Group Annual Meeting. Wilmington, NC, U.S.A. **October 2015**

2. **Rong An**, Keith E Gubbins, Liangliang Huang. Liquid/Solid Interaction-Dependent Nanofriction Coefficient at Simple Fluid/Solid Interfaces. American Institute of Chemical Engineers (AIChE), Annual Meeting, Atlanta, GA, U.S.A. **November 2014**

3. **Rong An**, Yudan Zhu, Jiahua Zhu, Wei Zhuang, Xiaohua Lu. Low Friction Mesoporous Titanium Dioxide Films Defending Against *Escherichia coli*. American Institute of Chemical Engineers (AIChE), Annual Meeting, Atlanta, GA, U.S.A. **November 2014**

4. **Rong An**, Xiaohua Lu, Ximing Wu, Changsong Wang, Chang Liu, Shuangqin Fu. Low Frictional Mesoporous Titanium Dioxide Film by Geometrical Roughness-Induced Heterogeneous Nanostructure from Titanate. American Institute of Chemical Engineers (AIChE), Annual Meeting, Pittsburgh, PA, U.S.A. **October 2012**

5. Xin Feng, Xiaohua Lu, **Rong An**, Longyun Qiu, Yijun Shi. An Approach to Low Friction by Combination of mesoporous Titanium Dioxide Film and Ionic Liquid. American Institute of Chemical Engineers (AIChE), Annual Meeting, Pittsburgh, PA, U.S.A. **October 2012**

5. **Rong An**, Mingjie Wei, Longyun Qiu, Liwen Mu, Yijun Shi, Xiaohua Lu, Xin Feng. 1,2-Propanediol/Choline Chloride Ionic Liquid Nanotribological Behavior on Mesoporous TiO₂ Film with Atomic Force Microscopy (AFM). 6th China International Symposium on Tribology. Lanzhou, China, **August 2011**

6. **Rong An**, Chang Liu, Shuangqin Fu, Xiaohua Lu, Xin Feng. Effects of TiO₂ Surface Chemical Heterogeneity on Bovine Serum Albumin (BSA) Adsorption. National Doctoral Forum. Nanjing, China, **November 2011** (*win the 2nd prize in National Doctoral Forum*)

POSTER PRESENTATION AND WORKSHOP

1. **Rong An**, Liangliang Huang, Keith E Gubbins, 5th US-Poland Workshop “Thermodynamics of Complex Fluids and Interfaces”, Warsaw, Poland, **June 2014**

2. **Rong An**, Liangliang Huang, Keith E Gubbins, Intl. Graduate Research Training Group Annual Meeting. Potsdam, Germany, **June 2014**

3. **Rong An**, Liangliang Huang, Keith E Gubbins, Liquid/Solid Interaction-Dependent Nanofriction Coefficient at Simple Fluid/Solid Interfaces. Postdoctoral Research Symposium at NC State University, NC, U.S.A. **May 2014**

4. Xiaohua Lu, **Rong An**, Hanbing He, Yuanhui Ji, Yudan Zhu, Suoying Zhang, Gulou Shen, Non-equilibrium Thermodynamics Analysis and its Application for Interface Mass Transfer, American Institute of Chemical Engineers (AIChE), Annual Meeting, Minneapolis, MN, U.S.A.

October 2011

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E-mail anronganrong@163.com, ran@njust.edu.cn

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- Top 10%
 - Top 5%

(AFM), (FESEM), X (XRD),
(Raman), (Ellipsometry), (Profilometer), (TGA),
(BET)

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- **2015 10** Nanjing University of Science & Technology,
Nanjing, China
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 - ✓ TiO₂
 - **2013 12 -2015 10** North Carolina State University, Raleigh,
NC, U.S.A. **Keith E Gubbins**
 - ✓
 - ✓ AFM
 - **2012 10** University of Washington, Seattle, WA, U.S.A
 - ✓ AFM, Ellipsometry, Raman

● 2008 9 - 2013 7

Nanjing Tech University, Nanjing, China

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● 2017 1 -2019 12

● 2016 1 -2017 12

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● 2009 1 -2013 10

Atomic Force Microscopy AFM

Bruker AFM

● 2010 9 - 2013 10

● 2008 9 - 2009 9

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1. **Rong An**, Liangliang Huang, Yun Long, Berc Kalanyan, Xiaohua Lu, Keith E Gubbins, Liquid-Solid Nanofriction and Interfacial Wetting, **Langmuir**, 2016, 32(3): 743-750
 2. **Rong An**, Wei Zhuang, Zhuhong Yang, Xiaohua Lu, Jiahua Zhu, Yanfang Wang, Yihui Dong, Nanhua Wu. Protein Adsorptive Behavior on Mesoporous Titanium Dioxide Determined by Geometrical Topography. **Chemical Engineering Science**, 2014, 117, 146–155
 3. **Rong An**, Yudan Zhu, Nanhua Wu, Wenlong Xie, Jiawei Lu, Xin Feng, Xiaohua Lu. Wetting Behavior of Ionic Liquid on Mesoporous Titanium Dioxide Surface by Atomic Force Microscopy. **ACS Applied Materials & Interfaces**, 2013, 5, 2692 – 2698
 4. **Rong An**, Qiuming Yu, Luzheng Zhang, Yudan Zhu, Xiaojing Guo, Shuangqin Fu, Licheng Li, Changsong Wang, Ximing Wu, Chang Liu, Xiaohua Lu. Simple Physical Approach to Reducing Frictional and Adhesive Forces on a TiO₂ Surface via Creating Heterogeneous Nanopores. **Langmuir**, 2012, 28 (43), 15270–15277
 5. . 2012, CN102534609B
 6. . TiO₂ . 2014, 65, 1750-1758
 7. Wei Zhuang, Licheng Li, Jiahua Zhu, **Rong An**, Linghong Lu, Xiaohua Lu, Xinbing Wu, Hanjie Ying. Facile Synthesis of Mesoporous MoS₂-TiO₂ Nanofibres for Ultrastable Lithium Ion Battery Anodes. **ChemElectroChem**, 2015, 2, 374-381.
 8. Wei Zhuang, Linjiao He, Jiahua Zhu, **Rong An**, Xinbing Wu, Liwen Mu, Xiaohua Lu, Linghong Lu, Xiaojing Liu, Hanjie Ying. TiO₂ Nanofibers Heterogeneously Wrapped with Reduced Graphene Oxide as Efficient Pt Electrocatalyst Supports for Methanol Oxidation. **International Journal of Hydrogen Energy**, 2015, 40, 3679-3688.
 9. . 2009, CN101723707A

1. **Rong An**, Liangliang Huang, Yihui Dong, Richard Spontak, Keith E Gubbins. The Role of Polymer-Substrate Interaction Strength in Polymer Films on Solid Substrates: the Glass Transition and Friction Force

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