姓　名	方真	**性别**	男	
职　称	教授	**系别**	农机系生物能源组	
学　位	博士	**电话**		
E-mail	zhenfang@njau.edu.cn			
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研究领域

方真　二级教授　博士生导师; 中国农大生物和农业工程博士（导师：曾德超院士）; 加拿大麦吉尔（McGill）大学材料工程博士（导师：JA Kozinski 院士）。他是快速水解技术发明人 (美国专利号 US patent#: 8268126, 2012; US patent#: 9115215, 2015; US patent#: 9243303, 2016)。方真教授是 Springer 系列丛书“生物燃料和生物炼制”总编辑， Biotechnology for Biofuels (IF 6.4，生物能源领域影响因子最高的刊物)副主编，Biofuels, Bioproducts and Biorefining (IF 4.4)顾问编委, 以及多个国际期刊的编委。并为国际著名大学（如 Purdue)正教授资格评审专家。进入“2014 和 2015 年中国高被引学者”能源领域榜单（Elsevier-Scopus）。获 2012 云南省政府彩云奖。他有 96 篇论文(大多为 Q1 区)发表于国际著名的能源/化工/农业工程刊物。近六年在国际著名出版社出版生物能源领域英文专著 14 部（Springer 9 部）。作为第一发明人或本小组的发明，19 项中国和 3 项美国发明专利已授权。

研究内容:

转化农业和生物质废弃物为高附加值的燃料，化学品和生物制品。生物质化学（预处理，合成，气化，水解，液化，燃烧等）和生物化学转化(如, 微生物油、藻类生物柴油, 发酵制氢和丁醇等)及离子液体和纳米催化剂用于生物炼制，能源系统优化和评价。

具体研究内容包括如下：

（1）纳米和固体催化剂的制备及应用，包括催化木质纤维素水解并生产可发酵糖，合成化学品和生物燃料，和催化植物油制备生物柴油等；

（2）水热法水解纤维素、木质纤维素生产可发酵糖、有机酸和化学品等，及木质素的开发与应用；

（3）微生物发酵法转化木质纤维素水解产物生产油脂（生物柴油）、醇、酮、有机酸、氢气及其它次级代谢产物。微生物发酵法转化副产品甘油生产乳酸、丙二醇等化学品。

（4）绿色溶剂的研发与应用（水热水，离子液体，有机电解液，超临界

	流体等），双功能催化剂合成及用于催化生物质制化学品等； （5）能源政策和规划，能源系统优化和评价。 生物能源组网址: http://biomass-group.njau.edu.cn/； http://woodrefinery.com/zhenfang
社会兼职	Springer 系列丛书“生物燃料和生物炼制”总编辑。他是 Biotechnology for Biofuels (IF 6.4，生物能源领域影响因子最高的刊物)副主编，Biofuels, Bioproducts and Biorefining (IF 4.4)顾问编委，以及多个国际能源期刊的编委。并为国际著名大学（如 Purdue)正教授资格评审专家。
承担项目	1. Nanjing Agricultural University, Comprehensive Unitization of Agricultural Crop Wastes to Biofuels (#68Q-0603, 10 million Yuan). (2015-2020)。 2. 中国科学院科研装备研制项目：用于生物燃料制备的多功能快速转化反应装置的研制（2012-2015）。 3. 云南省首批“百名海外高层次人才引进计划”，生物冶炼（2012-2015）。
学术成果	2016 出版英文著作： 1. **Zhen Fang**, R. L. Smith, Jr.(Editors), **Production of Biofuels and Chemicals from Lignin**, Springer Book Series - Biofuels and Biorefineries, Springer-Verlag, Heidelberg Berlin, hardcover, ISBN 978-981-10-1964-7, 435 pages, **2016**. 2016 出版英文书的章节： 1. XF Tian, **Zhen Fang***, RL Smith, Jr., ZQ Wu, MY Liu, Properties, Chemical Characteristics and Application of Lignin and Its derivatives, Editors: **Zhen Fang**, RL Smith Jr, Production of Biofuels and Chemicals from Lignin, Springer Book Series - Biofuels and Biorefineries, Publisher: Springer-Verlag, Heidelberg Berlin, Chapter 1, Pages 3-34, ISBN978-981-10-1964-7, **2016.** 2016 国际期刊论文： *1.* YT Wang, **Zhen Fang***, F Zhang, Esterification of Oleic Acid to Biodiesel Catalyzed by a Highly Acidic Carbonaceous Catalyst, Applied Energy, minor revision after review (Oct **2016).** *2.* H Li, **Zhen Fang***, J Luo, S Yang, Direct Conversion of Biomass Components to the Biofuel Methyl Levulinate Catalyzed by Acid-Base Bifunctional Zirconia-Zeolites, Applied Catalysis B: Environmental, **200**, 182–191 (**2017**). 3. XK Li, **Zhen Fang***, J Luo, TC Su, Coproduction of Furfural and Easily Hydrolyzable Residue from Sugar Cane Bagasse in the MTHF/Aqueous Biphasic System: Influence of Acid Species, NaCl Addition, and MTHF, ACS Sustainable Chemistry & Engineering, **4(10),** 5804−5813 (**2016).** 4. XF Tian, L Rehmann, C Xu, **Zhen Fang***, Pretreatment of Eastern White Pine (Pinus Strobes L.) for Enzymatic Hydrolysis and Ethanol Production

by Organic Electrolyte Solutions, ACS Sustainable Chemistry & Engineering, **4(5)**, 2822-2829 (**2016)**.

5. F Zhang, Xue-Hua Wu, Min Yao, **Zhen Fang***, YT Wang, Production of Biodiesel and Hydrogen from Plant Oil Catalyzed by Magnetic Carbon-Supported Nickel and Sodium Silicate, Green Chemistry, **18**, 3302-3314 (**2016**).
6. M Huang, J Luo, **Zhen Fang***, H Li, Biodiesel Production Catalyzed by Highly Acidic Carbonaceous Catalysts Synthesized *via* Carbonizing Lignin in Sub- and Super-critical Ethanol, Applied Catalysis B: Environmental, **190**, 103–114 (**2016)**.
7. H Li, **Zhen Fang***, RL Smith Jr., S Yang, Efficient Valorization of Biomass to Biofuels with Bifunctional Solid Catalytic Materials, Progress in Energy and Combustion Science, **55,** 98–194 (**2016).**
8. D Jiang, **Zhen Fang***, SX Chin, XF Tian, Biohydrogen Production from Hydrolysates of *Jatropha* Hulls and Sugarcane Bagasse with *Clostridium Butyrium*, Scientific Reports, **6**, 27205, DOI: 10.1038/srep27205 (**2016**).
9. H Li, **Zhen Fang***, S Yang, Direct Conversion of Sugars and Ethyl Levulinate into γ-Valerolactone with Superparamagnetic Acid-Base Bifunctional ZrFeOx Nanocatalysts, ACS Sustainable Chemistry & Engineering, **4(1)**, 236-246 (**2016).**
10. H Li, **Zhen Fang***, S Yang, Direct Catalytic Transformation of Biomass Derivatives into Biofuel Component -Valerolactone with Magnetic NiZr Nanoparticles, ChemPlusChem, **81,** 135-142, (**2016)**.

2016 中文期刊论文：

*1. CH Zhu F Guo, Z Fang, XK Li, J Luo, Enzymatic Hydrolysis of Cellulose in Aqueous Ionic Liquid Solution, Journal of Yunnan University (Natural Sciences), accepted, **2016**.*

授权美国专利：

1. **Zhen Fang***, Method for the dissolving and rapid hydrolyzing of lignocellulosic biomass, device thereof and use of the same.
   Chinese invention patent: CN101974161-A (**Feb. 2011)**; ZL201010297515.4, **Oct. 2012 (GRANTED).**
   International PCT invention patent, PCT/CN2011/001099, application date: **April 7, 2011**.
   US patent#: 9243303 (Issue date: 01/26/2016).
2. **Zhen Fang***, Method of Completely Dissolving and Rapidly Hydrolyzing Cellulose, and Uses of Said Method.
   International PCT invention patent, PCT/CN2010/001253, application date: **August 18, 2010**.
   US patent filed (application #: 13259526, Sep. 23, 2011), Publication number: US 2012/0067342 A1, Publication date: 2012-03-22.
   US patent#: 9115215 (Issue date: 08/25/2015).
3. **Zhen Fang***, C Fang, Method, Equipment and Applications for Fast Complete Dissolution and Hydrolysis of Lignocellulosic Biomass.
   International PCT invention patent #: PCT/CN2008/000623, application date: **March 28, 2008**; disclosure publication date: Feb. 12, 2009,

	publication#: WO 2009/018709 A1; Chinese invention patent: CN101638442-A CN101235095-A (**Aug., 2008)**; ZL200710141265.3 (**June, 2013) (GRANTED)**. **US patent#: 8268126 (Issue date: 09/18/2012)**.
奖励荣誉	1．云南省政府彩云奖　云南省政府　　2012 2．云南百人高端人才　云南省政府　　2011 3．中科院百人学者 中科院　　2010 4．连续两年（2014 和 2015）进入“中国高被引学者”能源领域榜单（国际著名出版社-爱思唯尔） 2016 5. 英文专著进入高下载书籍前 25%：Pretreatment Techniques for Biofuels and Biorefineries，Among the top 25% most downloaded eBooks in 2013，Springer-Nature 国际著名出版社-施普林格.自然　　2014

后附英文样表

Teaching staff/ Personal information

<table>
<tr><td>Name</td><td>Fang Zhen</td><td>Gender</td><td colspan="2">Male</td><td rowspan="4">  </td></tr>
<tr><td>Title</td><td>Professor</td><td>Department</td><td colspan="2">Biomass group</td></tr>
<tr><td>Degree</td><td>PhD Eng.</td><td>Telephone</td><td colspan="2"></td></tr>
<tr><td>E-mail</td><td colspan="4">zhenfang@njau.edu.cn</td></tr>
<tr><td>Unit address</td><td colspan="2">A503 YuXian Building, 40 Dianjiangtai Road, Pukou District, Nanjing</td><td>Post code</td><td colspan="2">210031</td></tr>
<tr><td>Research field</td><td colspan="5">1.Hydrolysis of lignocellulosic wastes
Fast hydrolysis, low-temperature hydrolysis with catalysts and enzymatic hydrolysis are studied. The sugars produced are biologically converted to biofuels and chemicals (such as bio-hydrogen, ethanol and 2,3 butanediol).
(1) Fast hydrolysis (e.g., 350 ^{o}C)
(2) Low-temperature hydrolysis with catalysts (e.g., 150 ^{o}C)
(3) Enzymatic hydrolysis (e.g., 50 ^{o}C)

2.Synthesis of biodiesel
Heterogeneous nano or magnetic catalysts (such as magnetic carbonaceous acid, calcined/activated hydrotalcite nanoparticles, Na_2SiO_3@Fe_3O_4/C, $CaFe_2O_4$-$Ca_2Fe_2O_5$-based catalyst) are produced via different methods (such as co-precipitation, hydrothermal, calcinations, loading).

3.Chemical synthesis of value-added products from lignocellulosic wastes
Value-added products (such as 5-hydroxymethylfurfural, biochar, acids, furfural, alkyl levulinates and γ-valerolactone (GVL) etc.) are synthesized in green solvents with acid, base and bi-functional heterogeneous catalysts (such as modified zeolites, ZrO_2-zeolite hybrids).

4.Biological production of biofuels from hydrolysates and organic wastes
Biofuels and chemicals (such as bio-hydrogen, ethanol, 2,3 butanediol, lipids) are produced via fermentation of hydrolysates and organic wastes.

5.Thermal conversions of biomass and organic wastes
(1) Fast pyrolysis
(2) Slow pyrolysis for biochar production
(3) H_2 production from organic wastes
(4) Supercritical water oxidation (SCW oxidation) of toxic organic wastes

6.Hydrothermally solubilize biomass, and subsequently convert it to biofuels and chemicals</td></tr>
</table>

	7.Nano or micro catalysts synthesis using hydrothermal method or other conventional ways (e.g., precipitation and calcination) **8.Energy planning and policy, Techno-economic analysis** Biomass group: URL: http://biomass-group.njau.edu.cn/; http://woodrefinery.com/zhenfang/.
Social appointments	Editor-in-Chief Springer Book Series – Biofuels and Biorefineries
Research projects	Nanjing Agricultural University, Comprehensive Unitization of Agricultural Crop Wastes to Biofuels (#68Q-0603, 10 million Yuan). (2015-2020)
Academic achievements	Books (2016): **1.Zhen Fang**, R. L. Smith, Jr.(Editors), **Production of Biofuels and Chemicals from Lignin**, Springer Book Series - Biofuels and Biorefineries, Springer-Verlag, Heidelberg Berlin, hardcover, ISBN 978-981-10-1964-7, 435 pages, **2016**. Book Chapetrs (2016): 1.XF Tian, **Zhen Fang***, RL Smith, Jr., ZQ Wu, MY Liu, Properties, Chemical Characteristics and Application of Lignin and Its derivatives, Editors: **Zhen Fang**, RL Smith Jr, Production of Biofuels and Chemicals from Lignin, Springer Book Series - Biofuels and Biorefineries, Publisher: Springer-Verlag, Heidelberg Berlin, Chapter 1, Pages 3-34, ISBN978-981-10-1964-7, **2016.** International journal papers (2016): 1. YT Wang, **Zhen Fang***, F Zhang, Esterification of Oleic Acid to Biodiesel Catalyzed by a Highly Acidic Carbonaceous Catalyst, Applied Energy, minor revision after review (Oct **2016).** *2.* H Li, **Zhen Fang***, J Luo, S Yang, Direct Conversion of Biomass Components to the Biofuel Methyl Levulinate Catalyzed by Acid-Base Bifunctional Zirconia-Zeolites, Applied Catalysis B: Environmental, **200**, 182–191 (**2017**). *3.* XK Li, **Zhen Fang***, J Luo, TC Su, Coproduction of Furfural and Easily Hydrolyzable Residue from Sugar Cane Bagasse in the MTHF/Aqueous Biphasic System: Influence of Acid Species, NaCl Addition, and MTHF, ACS Sustainable Chemistry & Engineering, **4(10),** 5804−5813 (**2016).** 4. XF Tian, L Rehmann, C Xu, **Zhen Fang***, Pretreatment of Eastern White Pine (Pinus Strobes L.) for Enzymatic Hydrolysis and Ethanol Production by Organic Electrolyte Solutions, ACS Sustainable

Chemistry & Engineering, **4(5)**, 2822-2829 (**2016)**.

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9. H Li, **Zhen Fang***, S Yang, Direct Conversion of Sugars and Ethyl Levulinate into γ-Valerolactone with Superparamagnetic Acid-Base Bifunctional ZrFeOx Nanocatalysts, ACS Sustainable Chemistry & Engineering, **4(1)**, 236-246 (**2016).**
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Journal papers in chinese (2016)：

*1. CH Zhu F Guo, Z Fang, XK Li, J Luo, Enzymatic Hydrolysis of Cellulose in Aqueous Ionic Liquid Solution, Journal of Yunnan University (Natural Sciences), accepted, **2016**.*

Authorized US patents：

1. Zhen Fang*, Method for the dissolving and rapid hydrolyzing of lignocellulosic biomass, device thereof and use of the same.

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US patent#: 9115215 (Issue date: 08/25/2015).

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	date: **March 28, 2008**; disclosure publication date: Feb. 12, 2009, publication#: WO 2009/018709 A1; Chinese invention patent: CN101638442-A CN101235095-A (**Aug., 2008)**; ZL200710141265.3 (**June, 2013) (GRANTED)**. **US patent#: 8268126 (Issue date: 09/18/2012)**.
Reward & honor	**Zhen Fang** is professor and leader of biomass group, Nanjing Agricultural University. He is the inventor of the "fast hydrolysis" process. He is listed in the "Most Cited Chinese Researchers" in energy for 2014 and 2015 (Elsevier-Scopus). Professor Fang specializes in thermal/biochemical conversion of biomass, nanocatalyst synthesis and its applications, and pretreatment of biomass for biorefineries. He obtained his PhDs from China Agricultural University (Biological and Agricultural Engineering, Beijing) and McGill University (Materials Engineering, Montreal). Professor Fang is Editor-in-Chief, Springer Book Series - *Biofuels and Biorefineries*; associate editor of *Biotechnology for Biofuels*, and is serving on editorial boards of major international journals in energy.