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所在学科: 生物质复合材料

研究方向: 生物质材料功能改良

主讲课程: 《生物材料功能化技术》、《生物质材料概论》、《科技写作与检索》

主持参与课题、出版教材、发表论文及检索情况:

1、主持参与课题

- (1)德意志学术交流中心(DAAD)项目: 化学改性植物纤维制造纤维热塑性复合塑料的研究, 5.0万欧元, 2006.05-2008.09, 主持。
- (2)芬兰UPM公司横向项目: 木材单板功能改良, 26万英镑, 2008.10-2010.03, Principal Investigator.
- (3)国家自然科学基金面上项目: 生物质纤维的有机硅烷改性研究 (30771680) , 28万, 2008.01-2010.12, 参加。
- (4)国家林业局行业标准项目: 室外木结构用涂料 (2014-LY-066) , 8万, 2014.01-2015.12, 参加。
- (5)国家公益行业专项: 单板浸渍增强技术 (201004006-4) , 83万, 2010.01-2012.12, 主持。
- (6)国家自然科学基金面上项目: 木材高效塑化功能改良用离子液体的合成及作用机理研究 (31070507) , 35万, 2011.01-2013.12, 主持。
- (7)国家自然科学基金重大国际合作项目: 基于动态塑化挤出成型的木质纤维塑性加工原理 (31010103905) , 200万, 2011.01-2013.12, 参加。
- (8)国家公益行业科研重大专项: 绿色节能木塑门窗关键技术研究及示范 (201204802) , 800万, 2012.01-2015.12, 参加。
- (9)十二五科技支撑课题任务: 木塑复合材料制造技术研究及示范 (2012BAD32B04-1) , 796万, 2012.01-2014.12, 主持。
- (10)教育部新世纪优秀人才支持计划: 编号 (NCET-11-0608) , 50万, 2012.01-2014.12, 主持。
- (11)国家自然科学基金青年项目: 高木质纤维填充热塑性聚合物熔体流变行为研究 (31100425) , 21万, 2011.01-2014.12, 参加。
- (12)哈尔滨市科技创新人才研究专项: 通过木材细胞壁原位化学改性实现木塑复合材料塑性加工的关键技术研究 (2012RFXXN021) , 10.5万, 2012.01-2014.12, 主持。
- (13)中央高校基本科研业务费: 细胞壁木质素的原位改性及其改善高填充木塑复合材料加工性能的机理 (DL12DB02) , 40万, 2011.09-2014.09, 主持。
- (14)黑龙江省科技转化项目: 低质速生杨木密实化技术研发, 40万, 2013.01-2015.12, 主持。
- (15)国家自然科学基金面上项目: 活化单糖接枝改性木材细胞壁的机理研究 (31470585) , 80万, 2015.01-2018.12, 参加。
- (16)黑龙江省杰出青年科学基金: 生物质细胞壁功能改良方法与机理, 50万, 2015.01-2017.12, 参加。

2、出版论著

- (1) 参编美国化学学会著作: Xie Y, Krause A, Militz H. (2014) Wood protection with dimethyloldihydroxyethyleneurea and its derivatives. In: Shultz T, et al., Deterioration and Protection of Sustainable Biomaterials. American Chemistry Society Symposium Series, Vol. 1158, Chapter 17, pp 287-299. DOI: 10.1021/bk-2014-1158
- (2) 参编英国皇家化学学会著作: Hill CAS, Xie Y. (2013) The water vapour sorption properties of cellulose. In: Harding SE (ed). Stability of Complex Carbohydrate Structures: Biofuels, Foods, Vaccines and Shipwrecks. Chapter 11, pp 137-152. Royal Society of Chemistry. DOI:10.1039/9781849735643-00137
- (3) 专著: Xie Y. Surface properties of wood modified with cyclic N-methylol compounds. Sierke Verlag, 2006.

3、发表论文

- 1.He X, Xiao Z, Feng X, Sui S, Wang Q, Xie Y*. Modification of poplar wood with glucose cross-linked with citric acid and 1, 3 dimethylol-4, 5-dihydroxy ethyleneurea. *Holzforschung* (2015) DOI:10.1515/hf-2014-0317
- 2.Liu T, Wang Q, Xie Y, Fu Q. Incorporation effect of enzymatic hydrolysis lignin on the mechanical and rheological properties of the resulting wood flour/high density polyethylene composites. *Polymer Composites* (2015) DOI:10.1002/pc.23190

- 3.Ou R, Wang Q, Wolcott MP, Sui S, Xie Y*. Rheological behaviour and mechanical properties of wood flour/high density polyethylene blends: Effects of esterification of wood with citric acid. *Polymer Composites* (2015) DOI:10.1002/pc.23212.
- 4.Wang Q, Xiao Z, Wang W, Xie Y*. Coupling pattern and efficacy of organofunctional silanes in wood flour filled polypropylene or polyethylene composites. *Journal of Composite Materials* (2015)49(6): 677-684. DOI:10.1177/0021998314525065.
- 5.Ou R, Xie Y, Wang Q*, Sui S, Wolcott MP*. Material pocket dynamic mechanical analysis: a novel tool to study thermal transition in wood fibers plasticized by an ionic liquid (IL). *Holzforschung* (2015)69(2)223-232. DOI:10.1515/hf-2014-0080.
- 6.Xie Y, Xiao Z, Mai C*. Degradation of chemically modified Scots pine (*Pinus sylvestris* L.) with Fenton' s reagent. *Holzforschung* (2015)69(2)153-161. DOI:10.1515/hf-2014-0067.
- 7.Ou R, Wang Q, Wolcott MP, Sui S, Xie Y*, Song Y. Effects of chemical modification of wood flour on the rheological properties of high density polyethylene blends. *Journal of Applied Polymer Science* (2014) 131(23):xx-yy. DOI:10.1002/app.41200.
- 8.Ou R, Xie Y, Wang Q*, Sui S, Wolcott MP*. Thermal, crystallization, and dynamic rheological behavior of wood particle/HDPE composites: Effect of removal of wood cell wall composition, *Journal of Applied Polymer Science* (2014) 131(11):xx-yy.: DOI:10.1002/app.40331.
- 9.易欣, 谢延军, 王清文, 于伸.木质护壁板产品设计研发的条件与方向. *安徽农业科学*(2014)42(32)11368-11369.
- 10.刘培培, 符启良, 肖泽芳, 温旭雯, 谢延军,王清文,王海刚*. 氮羟甲基树脂与糠醇处理杨木紫外加速老化的性能. *东北林业大学学报* (2014)42(10): 106-110.
- 11.Jiang T, Gao H, Sun J, Xie Y, Li X. Impact of DMDHEU resin treatment on the mechanical properties of poplar. *Polymers and Polymer Composites* (2014) 22(8):669-674.
- 12.Xie Y*, Liu N, Wang Q, Xiao Z, Wang F, Zhang Y, Militz H. Combustion behavior of oak wood (*Quercus mongolica* L.) modified by 1,3-dimethylol-4,5-dihydroxyethyleneurea (DMDHEU). *Holzforschung* (2014) 68(8):881-887, DOI:10.1515/hf-2013-0224.
- 13.Jiang T, Feng X, Wang Q, Xiao Z, Wang F, Xie Y*. Fire performance of oak wood modified with N-methylol resin and methylolated guanylurea phosphate/boric acid-based fire retardant. *Construction and Building Materials* (2014) 72:1-6. DOI:10.1016/j.conbuildmat.2014.09.004
- 14.易欣, 谢延军, 于伸*. 内墙护壁板产品设计研发的市场调研. *设计艺术研究*(2014)4(2):37-42.
- 15.Ou R, Xie Y, Wang Q*, Sui S, Wolcott MP*. Thermoplastic deformation of poplar wood plasticized by ionic liquids measured by a nonisothermal compression technique. *Holzforschung* (2014) 68(5):555-566. DOI:10.1515/hf-2013-0136
- 16.Ou R, Xie Y, Wang Q*, Sui S, Wolcott MP*. Effects of ionic liquid on the rheological properties of wood flour/high density polyethylene composites. *Composites Part A: Applied Science and Manufacturing* (2014) 61:134-140. DOI:10.1016/j.compositesa.2014.02.017
- 17.Feng X, Xiao Z, Sui S, Wang Q, Xie Y*. Esterification of wood with citric acid: The catalytic effects of sodium hypophosphite (SHP). *Holzforschung* (2014) 68(4): 427-433. DOI:10.1515/hf-2013-0122
- 18.孟什,冯鑫浩,贺晓艳,隋淑娟,肖泽芳*,谢延军,王清文. 氮羟甲基树脂改性杨木的涂饰性能. *东北林业大学学报*(2014) 42(4):96-100.
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- 20.Liu T, Wang Q, Xie Y, Lee S, Wu Q. Effects of use of coupling agents on the properties of microfibrillar composite based on high-density polyethylene and polyamide-6. *Polymer Bulletin* (2014) 71:685-703. DOI:10.1007/s00289-013-1086-x
- 21.Ou R, Xie Y, Wolcott MP, Yuan F, Wang Q*. Effect of wood cell wall composition on the rheological properties of wood particle/high density polyethylene composites. *Composites Science and Technology* (2014) 93:68-75. DOI:10.1016/j.compscitech.2014.01.001
- 22.Popescu CM*, Hill CAS, Curling S, Ormondroyd G, Xie Y. The water vapour sorption behaviour of acetylated birch wood: how acetylation affects the sorption isotherm and accessible hydroxyl content. *Journal of Materials Science* (2014) 49, 2362-2371. DOI:10.1007/s10853-013-7937-x
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- 24.Yuan F, Ou R, Xie Y, Wang Q*. Reinforcing effects of modified Kevlar fiber on the mechanical properties of wood-flour/polypropylene composites. *Journal of Forestry Research* (2013)24(1):149-153. DOI:10.1007/s11676-013-0335-z
- 25.Yang W, Xie Y, Wang H, Liu B, Wang Q*. Impacts of freezing and thermal treatments on dimensional and mechanical properties of wood flour-HDPE composite. *Journal of Forestry Research* (2013)24(1):143-147. DOI:10.1007/s11676-013-0334-0
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- 27.Xie Y, Klarhöfer L, Mai C. Degradation of wood veneers by Fenton reagents: Effects of 2,3-dihydroxybenzoic acid on mineralization of wood. *Polymer Degradation and Stability* (2012) 97(8):1270-1277. DOI:10.1016/j.polymdegradstab.2012.05.031
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- 29.谢延军*, 符启良, 王清文, 王海刚. 木材化学功能改良技术进展与产业现状. *林业科学* (2012) 48(9):154-163.
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- 31.Ou R, Xie Y, Shen X, Yuan F, Wang H, Wang Q. Solid biopolymer electrolytes based on all-cellulose composites prepared by partially dissolving cellulosic fibers in the ionic liquid 1-butyl-3-methylimidazolium chloride. *Journal of Materials Science* (2012) 47:5978-5986. DOI:10.1007/s10853-012-6502-3
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44.宋永明, 贾莹莹, 王清文, 谢延军, 王奉强. 可膨胀石墨对木粉——聚丙烯复合材料的阻燃作用. *东北林业大学学报* (2011)39:67-70.

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62.王清文*, 李淑君, 崔永志, 谢延军. 新型木材阻燃剂FRW的阻燃性能, *东北林业大学学报*, (1999) 27:31-33.

成果及奖励:

1.国际学术奖: RON COCKCROFT AWARD (2009), 国际木材保护研究组织 (International Research Group on Wood Protection) 。

2.国家科技进步二等奖 (2012): 木塑复合材料挤出成型制造技术及应用, 王清文、秦特夫、李大纲、刘嘉、李坚、王伟宏、宋永明、许民、郭垂根、谢延军。授予单位: 国务院。

3.黑龙江省科技进步一等奖 (2013): 基于细胞壁反应细胞腔填充的木材单板改良功能化技术, 谢延军、王清文、王奉强、程瑞香、隋淑娟、张志军、肖泽芳、王海刚、李泽文、刘明利、江涛。授予单位: 黑龙江省人民政府。

4.黑龙江省杰出青年科学基金获得者 (2015)

5.享受黑龙江省政府特殊津贴专家 (2014)

6.黑龙江省级领军人才梯队后备带头人 (2013)

7.入选教育部新世纪优秀人才支持计划 (2012)

8.杰出审稿人 (Elsevier, 2015)

9.生物质复合材料学科负责人 (2012)

学术兼职:

(1) 中国林学会生物质材料科学分会, 委员

(2) 中国林业产业联合会国际投资贸易促进会, 理事

(3) 中国林产工业协会结构材及室外材产业分会, 理事

(4) 中国木材保护工业协会专家委员会, 委员

(5) 中国木材保护工业协会木质功能材料与制品分会, 理事

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