



## 杨磊

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杨磊, 教授, 男, 1964年10月出生, 博士, 博士生导师。1994年就职于东北林业大学; 1998年在东北林业大学木材科学与技术专业获工学博士学位, 师从李坚院士; 博士期间赴日本国立岛根大学生物材料工学科合作研究; 2005-2007年在浙江海正集团博士后工作站从事植物活性成分功能化的博士后研究。获得国家技术发明二等奖1项, 教育部技术发明一等奖1项, 二等奖1项, 黑龙江省自然科学二等奖1项。申请国家发明专利42项, 获得授权10项, 撰写学术专著5部, 2011年任现职至今, 已发表SCI收录学术论文99篇, 其中第一作者和通讯作者论文64篇 (近5年41篇), JCR Q1 50篇 (近5年29篇), 被引频次前3%论文6篇 (近5年3篇)。影响因子累计达到383.8, 平均影响因子3.47。

### 教学情况:

主讲研究生课程包括天然药物化学 (硕士)、药物化学原理 (硕士)、药物化学文献阅读及方法创新 (硕士)、植物资源学 (博士)。

### 科学研究方向:

- 1) 环境友好溶剂分离分析植物目标活性成分;
- 2) 微波和超声等新技术在植物活性成分分离中的应用;
- 3) 新型环境友好催化剂实现目标植物成分转化增量;
- 4) 我国主要林源树种及林下资源生态化学利用;
- 5) 木本油料的清洁化制备及稳定性研究;
- 6) 制备生物活性组分微纳米粒子实现减毒增效利用;
- 7) 植物活性成分分离剩余物的资源化再利用。

### 近年研究课题:

1. 林业公益性行业科研专项林木生物质液体燃料的制备及其综合利用技术 (201304601) 合同经费840万元2013.1-2016.12项目主持人;
2. 林业公益性行业科研专项油樟和山桐子活性组分制备及效应 (201404602) 合同经费69万元2014.1-2016.12项目主持人;
3. 林业公益性行业科研专项奎尼酸提取分离和纯化工艺研究 (2014046160102) 合同经费16万元2014.1-2016.12项目主持人;
4. 林业公益性行业科研专项牡丹种皮多酚的分离纯化工艺研究 (20140470102-04) 合同经费: 40万元2014.1-2018.12项目主持人;
5. 黑龙江省自然科学基金杜香精油等成分多级制备及对黄芩根腐致病菌抑制机制的研究 (C2018005) 合同经费: 6万元2018.1-2021.12项目主持人;
6. 林业公益性行业科研专项水溶性杜仲全价提取物分离创新技术研制 (201504701-2-2) 合同经费: 40万元2015.1-2019.12项目主持人
7. 国家自然科学基金木本植物原花色素分级、纳米化制备表征及抗氧化抗辐射活性相关性 (31670580) 合同经费: 65万元2017.1-2020.12项目主持人

### 科研获奖:

- ▶ 国家技术发明二等奖, 2006年度, 茄尼醇高效提取纯化生产新工艺, 发明人 祖元刚、杨磊、付玉杰、赵春建、李庆勇、张玉红
- ▶ 教育部高等学校科学技术奖技术发明一等奖, 2005年度, 发明人 祖元刚, 杨磊, 付玉杰, 赵春建, 李庆勇, 张玉红
- ▶ 教育部高等学校科学技术奖技术发明二等奖, 2007年度, 发明人 祖元刚, 杨磊, 唐中华, 张琳, 赵修华, 罗猛, 张玉红, 张宝友
- ▶ 黑龙江省自然科学二等奖, 2014年度, 付玉杰、赵修华、赵春建、杨磊、祖元刚

### 近5年发表的主要SCI学术论文

1. Yusong Jin, Yunhui Zhang, Dongmei Liu, Dewen Liu, Chunying Zhang, Huijuan Qi, Huiyan Gu, **Lei Yang**\*, Zhiqiang Zhou\*. Efficient homogenization-ultrasound-assisted extraction of anthocyanins and flavonols from bog bilberry (*Vaccinium uliginosum* L.) marc with carnosic acid as an antioxidant additive. *Molecules* 2019, 24(14), 2537;
2. Yusong Jin, Zaizhi Liu, Dongmei Liu, Guangyu Shi, Dewen Liu, Yongfan Yang, Huiyan Gu, **Lei Yang**\*, Zhiqiang Zhou. Natural antioxidant of rosemary extract used as an additive in the ultrasound-assisted extraction of anthocyanins from lingonberry (*Vaccinium vitis-idaea* L.) pomace. *Industrial Crops and Products*, 2019, Volume 138, 111425.
3. Fengli Chen, Qiang Zhang, Huiyan Gu\*, **Lei Yang**\*. A modified approach for separating essential oil from the roots and rhizomes of *Asarum heterotropoides* var. *mandshuricum*. *Journal of Cleaner Production*, 2018, 172, 2075-2089. JCR Q1 TOP 6.395
4. Fengli Chen, Ming Xu, Xinyu Yang, Junling Liu, Yao Xiao, **Lei Yang**\*. An improved approach for the isolation of essential oil from the leaves of *Cinnamomum longepaniculatum* using microwave-assisted hydrodistillation concatenated double-column liquid-liquid extraction. *Separation and Purification Technology* 195 (2018) 110-120.
5. Fengli Chen, Jia Jia, Qiang Zhang, **Lei Yang**, Huiyan Gu. Isolation of essential oil from the leaves of *Polygonum viscosum* Buch-ham. using microwave-assisted enzyme pretreatment followed by microwave hydrodistillation concatenated with liquid-liquid extraction. *Industrial Crops and Products*. 2018, 112, 327-341.
6. Zaizhi Liu, **Lei Yang**\*. Antisolvent precipitation for the preparation of high polymeric procyanidin nanoparticles under ultrasonication and evaluation of their antioxidant activity in vitro. *Ultrasonics Sonochemistry* 43 (2018) 208-218. JCR Q1 TOP 7.279

7. Guoqiang Cui, Xuebing Yang, Tingting Liu, Zaizhi Liu, **Lei Yang\***. An efficient approach for the enzyme-enhanced extraction of camptothecin and 10-hydroxycamptothecin from the samara of *Camptotheca acuminata* using an ionic liquid solution. *Separation and Purification Technology* 200 (2018) 102–111.
8. Kexin Hou, Xuebing Yang, Meili Bao, Fengli Chen, Hao Tian, **Lei Yang\***. Composition, characteristics and antioxidant activities of fruit oils from *Idesia polycarpa* using homogenate-circulating ultrasound-assisted aqueous enzymatic extraction. *Industrial Crops and Products*, 2018, 117, 205-215.
9. Zaizhi Liu, Huiyan Gu, **Lei Yang\***. A novel approach for the simultaneous extraction of dihydroquercetin and arabinogalactan from *Larix gmelinii* by homogenate-ultrasound-synergistic technique using the ionic liquid. *Journal of Molecular Liquids*, Volume 261, 1 July 2018, Pages 41–49
10. Guoqiang Cui, Zaizhi Liu, Mengxia Wei, **Lei Yang\***. Turpentine as an alternative solvent for the extraction of gutta-percha from *Eucommia ulmoides* barks. *Industrial Crops and Products*. 2018, 121, 142–150.
11. Xinyu Yang, Mengxia Wei, Hao Tian, Tingting Liu, **Lei Yang\***. Enrichment and purification of aucubin from *Eucommia ulmoides* ionic liquid extract using macroporous resins. *Materials* 2018, 11, 1758.
12. Mengxia Wei, **Lei Yang\***. Determination of orientin in *Trollius chinensis* using ultrasound-assisted extraction and high performance liquid chromatography: Several often-overlooked sample preparation parameters in an ultrasonic bath (2017) *Journal of Chromatography A*, 1530, pp. 68-79.
13. Fengli Chen, Jia Jia, Qiang Zhang, Huiyan Gu\*, **Lei Yang\***. A modified approach for isolation of essential oil from fruit of *Amorpha fruticosa* Linn using microwave-assisted hydrodistillation concatenated liquid-liquid extraction (2017) *Journal of Chromatography A*, 1524, pp. 254-265.
14. Zaizhi Liu, Kailin Mo, Shimin Fei, Yuangang Zu, **Lei Yang\***. Efficient approach for the extraction of proanthocyanidins from *Cinnamomum longepaniculatum* leaves using ultrasonic irradiation and an evaluation of their inhibition activity on digestive enzymes and antioxidant activity in vitro (2017) *Journal of Separation Science*, 40 (15), pp. 3100-3113.
15. Fengli Chen, Qiang Zhang, Junling Liu, Huiyan Gu, **Lei Yang\***. An efficient approach for the extraction of orientin and vitexin from *Trollius chinensis* flowers using ultrasonic circulating technique. (2017) *Ultrasonics Sonochemistry*, 37, pp. 267-278.
16. Zaizhi Liu, Yuangang Zu, **Lei Yang\***. A process to preserve valuable compounds and acquire essential oils from pomelo flavedo using a microwave irradiation treatment. (2017) *Food Chemistry*, 224, pp. 172-180.
17. Fengli Chen, Qiang Zhang, Kailin Mo, Shimin Fei, Huiyan Gu, **Lei Yang\***. Optimization of ionic liquid-based homogenate extraction of orientin and vitexin from the flowers of *Trollius chinensis* and its application on a pilot scale. (2017) *Separation and Purification Technology*, 175, pp. 147-157.
18. Fengli Chen, Qiang Zhang, Shimin Fei, Huiyan Gu, **Lei Yang\***. Optimization of ultrasonic circulating extraction of samara oil from *Acer saccharum* using combination of Plackett–Burman design and Box–Behnken design. (2017) *Ultrasonics Sonochemistry*, 35, pp. 161-175.
19. Zaizhi Liu, Lu Qiao, Huiyan Gu, Fengjian Yang, **Lei Yang\***. Development of Brønsted acidic ionic liquid based microwave assisted method for simultaneous extraction of pectin and naringin from pomelo peels. (2017) *Separation and Purification Technology*, 172, pp. 326-337.
20. Zaizhi Liu, Lu Qiao, Fengjian Yang, Huiyan Gu, **Lei Yang\***. Brønsted acidic ionic liquid based ultrasound-microwave synergistic extraction of pectin from pomelo peels. (2017) *International Journal of Biological Macromolecules*, 94, pp. 309-318.
21. Fengli Chen, Kailin Mo, Qiang Zhang, Shimin Fei, Yuangang Zu, **Lei Yang\***. A novel approach for distillation of paeonol and simultaneous extraction of paeoniflorin by microwave irradiation using an ionic liquid solution as the reaction medium. (2017) *Separation and Purification Technology*, 183, pp. 73-82.
22. Fengli Chen, Xinglong Zhang, Qiang Zhang, Xinqi Du, **Lei Yang\***, Yuangang Zu, Fengjian Yang. Simultaneous synergistic microwave–ultrasonic extraction and hydrolysis for preparation of trans-resveratrol in tree peony seed oil-extracted residues using imidazolium-based ionic liquid. (2016) *Industrial Crops and Products*, 94, pp. 266-280.
23. Xinran Li, Fengli Chen, Shuangyang Li, Jun Jia, Huiyan Gu\*, **Lei Yang\***. An efficient homogenate-microwave-assisted extraction of flavonols and anthocyanins from blackcurrant marc: Optimization using combination of Plackett-Burman design and Box-Behnken design. (2016) *Industrial Crops and Products*, 94, pp. 834-847.
24. Fengli Chen, Qiang Zhang, Huiyan Gu, **Lei Yang\***. An approach for extraction of kernel oil from *Pinus pumila* using homogenate-circulating ultrasound in combination with an aqueous enzymatic process and evaluation of its antioxidant activity. (2016) *Journal of Chromatography A*, 1471, pp. 68-79.
25. Fengli Chen, Xinglong Zhang, Xinqi Du, **Lei Yang\***, Yuangang Zu, Fengjian Yang. A new approach for obtaining trans-resveratrol from tree peony seed oil extracted residues using ionic liquid-based enzymatic hydrolysis in situ extraction. (2016) *Separation and Purification Technology*, 170, pp. 294-305.
26. Shuangyang Li, Fengli Chen, Jun Jia, Zaizhi Liu, Huiyan Gu\*, **Lei Yang\***, Fei Wang, Fengjian Yang. Ionic liquid-mediated microwave-assisted simultaneous extraction and distillation of gallic acid, ellagic acid and essential oil from the leaves of *Eucalyptus camaldulensis*. (2016) *Separation and Purification Technology*, 168, pp. 8-18.
27. Xinxuan Du, Suchong Zu, Fengli Chen, Zaizhi Liu, Xinran Li, **Lei Yang\***, Yuangang Zu, Xiuhua Zhao\*, Lin Zhang. Preparation and characterization of cefquinome sulfate microparticles for transdermal delivery by negative-pressure cavitation antisolvent precipitation. (2016) *Powder Technology*, 294, pp. 429-436.
28. Fengli Chen, Xinqi Du, Yuangang Zu, **Lei Yang\***, Fei Wang. Microwave-assisted method for distillation and dual extraction in obtaining essential oil, proanthocyanidins and polysaccharides by one-pot process from *Cinnamomi Cortex*. (2016) *Separation and Purification Technology*, 164, pp. 1-11.
29. Zaizhi Liu, Ziyang Chen, Feng Han, Xinyu Kang, Huiyan Gu\*, **Lei Yang\***. Microwave-assisted method for simultaneous hydrolysis and extraction in obtaining ellagic acid, gallic acid and essential oil from *Eucalyptus globulus* leaves using Brønsted acidic ionic liquid [HO<sub>3</sub>S(CH<sub>2</sub>)<sub>4</sub>mim]HSO<sub>4</sub>. (2016) *Industrial Crops and Products*, 81, pp. 152-161.
30. Lianfei Zhao, Hua Wang, Huiyan Gu, **Lei Yang\***. Ionic liquid-lithium salt based microwave pretreatment followed by ultrasonic-assisted extraction of syringin and oleuropein from *Syringa reticulata* var. *mandshurica* branch bark by a dual response surface methodology. (2016) *Analytical Methods*, 8 (7), pp. 1532-1542.
31. Feng Han, Yupin Guo, Huiyan Gu\*, Fenglan Li, Baozhong Hu, **Lei Yang\***. Application of alkyl polyglycoside surfactant in ultrasonic-assisted extraction followed by macroporous resin enrichment for the separation of vitexin-2"-O-rhamnoside and vitexin from *Crataegus pinnatifida* leaves. (2016) *Journal of Chromatography B: Analytical Technologies in the Biomedical and Life Sciences*, 1012-1013, pp. 69-78.
32. Kexin Hou, Fengli Chen, Yuangang Zu, **Lei Yang\***. Ionic liquids-lithium salts pretreatment followed by ultrasound-assisted extraction of vitexin-4"-O-glucoside, vitexin-2"-O-rhamnoside and vitexin from *Phyllostachys edulis* leaves. (2016) *Journal of Chromatography A*, 1431, pp. 17-26.