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## 徐志祥

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徐志祥，男，博士，教授，硕士生导师，山东农业大学“1512”第二层次人才。一直从事食品质量与安全方面的教学、科研工作。兼任中国食品科学技术学会青年工作委员会委员、山东省食品学会副秘书长、泰安市营养学会理事、泰安市食品安全事故应急处置专家，泰安市农产品质量安全专家顾问咨询团成员等。是国外多种刊物如Journal of Agricultural and Food Chemistry, Journal of Immunological Methods的审稿人。

**讲授主要课程：**主要承担研究生《食品安全科学》、《食品安全新型检测技术》、《食品加工与安全领域专题讨论》、《食品安全检测新技术进展》、《食品安全与管理》及本科生《食品安全科学》、《食品安全科学概论》等课程的教学工作。

### 科研方向：

1. 食品中有毒有害残留物高灵敏快速检测技术研究（色谱、毛细管电泳、化学发光）；
2. 化学及仿生传感器分析方法研究；
3. 仿生免疫分析方法与理论研究；
4. 食品加工过程中有毒有害物质的产生机理、安全控制理论与技术研究；
5. 分子印迹仿生吸附在食品活性成分提取、分离中的应用研究。

### 代表性科研成果：

#### 1. 主持的国家及省部级项目

- (1) 2014年国家自然科学基金面上项目：基于量子点标记有机磷农药多残留仿生免疫分析研究，编号：31471649，2015.1-2018.12，主持；
- (2) 2011年国家自然科学基金面上项目：农药多残留仿生吸附检测方法及机理研究，编号：31171699，2012.1-2015.12，主持；
- (3) 2010年国家自然科学基金面上项目：亲水性分子印迹膜仿生免疫吸附检测食品中痕量丙烯酰胺，编号：31071543，2011.1-2013.12，主持；
- (4) 2013年国家农业科技成果转化项目：有机磷农药新型检测技术应用与示范，编号：2013GB2C60027，2013.9-2015.8，主持。

- (5) 2014年山东省科技计划项目：食品高温加工过程中丙烯酰胺优化控制关键技术研究，编号：  
2014GSF120010, 2014.07-2017.06, 主持；
- (6) 2010年国家博士后特别资助项目：亲水性印迹膜仿生免疫吸附检测食品中痕量喹乙醇，编号：  
201003645, 2010.12-2013.12, 主持；
- (7) 2009年山东省科技攻关：基于分子识别的农产品中有机磷农药痕量残留检测技术研究，编号：  
2009GG10009058, 2009.7-2012.7, 主持。

## 2. 研究成果

近5年先后在《Journal of Agricultural and Food Chemistry》(I区, top journal)、《Analytical and Bioanalytical Chemistry》、《Food Chemistry》、《Journal of Separation Science》等高水平刊物上发表论文42篇，其中SCI 收录39篇，EI 收录论文2篇，总影响因子76.465点，被他引230次。

### 发表的代表性研究成果：

- (1) Qinghua Tang, Xiujuan Shi<sup>#</sup>, Xiaolin Hou, Jie Zhou and Zhixiang Xu\*. Development of molecularly imprinted electrochemical sensors based on Fe3O4@MWNTs-COOH/CS nanocomposite layers for detecting traces of acephate and trichlorfon. *Analyst*, 2014, 139: 6406-6413. (IF 3.906)
- (2) Zhixiang Xu, Shuang Chen, Wei Huang, Guozhen Fang, Shuo Wang\*. Study on an on-line molecularly imprinted solid-phase extraction coupled with high-performance liquid chromatography for the determination of trace estrone in environment. *Analytical and Bioanalytical Chemistry*, 2008, 393: 1273-1279. (IF 3.578)
- (3) Zhixiang Xu, Guozhen Fang, Shuo Wang\*. Molecularly imprinted solid phase extraction coupled to high-performance liquid chromatography for determination of trace dichlorvos residues in vegetables. *Food Chemistry*, 2010, 119: 845-850. (IF 3.259)
- (4) Ling Meng, Xuguang Qiao, Jiaming Song, Zhixiang Xu\*, Junhong Xin, Yue Zhang. Study of an online molecularly imprinted solid phase extraction coupled to chemiluminescence sensor for the determination of trichlorfon in vegetables. *Journal of Agricultural and Food Chemistry*, 2011, 59: 12745-12751. (IF 3.107)
- (5) Xilong Wang, Xuguang Qiao, Yue Ma, Tao Zhao, Zhixiang Xu\*. Simultaneous determination of trace nine organophosphorous pesticide residues in fruit samples using molecularly imprinted matrix solid-phase dispersion followed by gas chromatography. *Journal of Agricultural and Food Chemistry*, 2013, 61: 3821-3827. (IF 3.107)
- (6) Zhixiang Xu, Jing Zhang, Li Cong, Ling Meng, Jiaming Song, Jie Zhou, Xuguang Qiao\*. Preparation and characterization of magnetic chitosan microsphere sorbent for separation and determination of environmental estrogens through SPE coupled with HPLC. *Journal of Separation Science*, 2011, 34: 46-52. (IF 2.594)
- (7) Junhong Xin, Xuguang Qiao, Yue Ma, Zhixiang Xu\*. Simultaneous separation and determination of 8 organophosphorous pesticide residues in vegetables through molecularly imprinted

- solid-phase extraction coupled to gas chromatography. *Journal of Separation Science*, 2012, 35: 3501–3508. (IF 2.594)
- (8) Qinghua Tang, Xilong Wang<sup>#</sup>, Fan Yu, Xuguang Qiao, Zhixiang Xu\*. Simultaneous determination of ten organophosphate pesticide residues in fruits by gas chromatography coupled with magnetic separation. *Journal of Separation Science*, 2014, 37: 820–827. (IF 2.594)
- (9) Xilong Wang, Limin Zhang, Mingxiao Li, Zhixiang Xu\*. Synthesis of a novel imprinted polymeric material for simultaneous recognition of the methamidophos and acephate. *Advances in Polymer Technology*, 2013, 32 (3). (IF 2.147)
- (10) Jiaming Song, Xuguang Qiao, Haihua Chen, Dongyan Zhao, Yue Zhang, Zhixiang Xu\*. Molecularly imprinted solid-phase extraction combined with high performance liquid chromatography for analysis of trace olaquindox residues in chick feeds. *Journal of the Science of Food and Agriculture*, 2011, 91: 2378–2385. (IF 1.879)
- (11) Zhixiang Xu, Jiaming Song, Liqing Li, Xuguang Qiao and Haihua Chen. Development of an on-line molecularly imprinted chemiluminescence sensor for determination of trace olaquindox in chick feeds. *Journal of the Science of Food and Agriculture*, 2012, 92: 2696–2702. (IF 1.879)
- (12) Qing Sun, Longhua Xu, Yue Ma, Xuguang Qiao, Zhixiang Xu\*. Study on a biomimetic enzyme-linked immunosorbent assay method for fast determination of trace acrylamide in French fries and cracker samples. *Journal of the Science of Food and Agriculture*, 2014, 94:102–108. (IF 1.879)
- (13) Xilong Wang, Qinghua Tang, Qingqing Wang, Xuguang Qiao, Zhixiang Xu\*. Study of a molecularly imprinted solid-phase extraction coupled with high-performance liquid chromatography for simultaneous determination of trace trichlorfon and monocrotophos residues in vegetables. *Journal of the Science of Food and Agriculture*, 2014, 94: 1409–1415. (IF 1.879)
- (14) Handong Zhao, Bingye Dai, Longhua Xu, Xilong Wang, Xuguang Qiao, Zhixiang Xu\*. Preparation and application of immobilized ionic liquid in solid-phase extraction for determination of trace acrylamide in food samples coupled with high-performance liquid chromatography. *Journal of the Science of Food and Agriculture*, 2014, 94: 1787–1793. (IF 1.879)
- (15) Tao Zhao, Qingqing Wang, Jie Li, Xuguang Qiao, Zhixiang Xu\*. Study on an electrochromatography method based on organic-inorganic hybrid molecularly imprinted monolith for determination of trace trichlorfon in vegetables. *Journal of the Science of Food and Agriculture*, 2014, 94: 1974–1980. (IF 1.879)
- (16) Ling Meng, Xuguang Qiao, Zhixiang Xu\*, Junhong Xin and Lei Wang. Development of a direct competitive biomimetic enzyme-linked immunosorbent assay based on a hydrophilic molecularly imprinted membrane for the determination of trichlorfon residues in vegetables. *Food Analytical Methods*, 2012, 5: 1229–1236. (IF 1.802)

- (17) Junhong Xin, Xuguang Qiao, Zhixiang Xu\*, Jie Zhou. Molecularly imprinted polymer as sorbent for solid-phase extraction coupling to gas chromatography for the simultaneous determination of trichlorfon and monocrotophos residues in vegetables. *Food Analytical Methods*, 2013, 6: 274–281. (IF 1.802)
- (18) Longhua Xu, Xuguang Qiao, Yue Ma, Xin Zhang, Zhixiang Xu\*. Preparation of a hydrophilic molecularly imprinted polymer and its application in solid-phase extraction to determine of trace acrylamide in foods coupled with high-performance liquid chromatography. *Food Analytical Methods*, 2013, 6: 838–844. (IF 1.802)
- (19) Hongyan Zhang, Yuwei Wei, Jianhua Zhou, Zhixiang Xu\*, Shuo Tian, Hua Huang, Jinxing He. Preparation and application of a molecular imprinting matrix solid phase dispersion extraction for the determination of olaquindox in chicken by high performance liquid chromatography. *Food Analytical Methods*, 2013, 6: 915–921. (IF 1.802)
- (20) Tao Zhao, Huiju Gao, Xilong Wang, Limin Zhang, Xuguang Qiao, Zhixiang Xu\*. Study on a molecularly imprinted solid-phase extraction coupled to capillary electrophoresis method for the determination of trace trichlorfon in vegetables. *Food Analytical Methods*, 2014, 7: 1159–1165. (IF 1.802)
- (21) Handong Zhao, Ningyang Li, Jinwang Li, Xuguang Qiao & Zhixiang Xu. Preparation and Application of Chitosan-Grafted Multiwalled Carbon Nanotubes in Matrix Solid-Phase Dispersion Extraction for Determination of Trace Acrylamide in Foods through High-Performance Liquid Chromatography. *Food Analytical Methods*, 2014. DOI 10.1007/s12161-014-0022-5 (IF 1.802)
- (22) Qingqing Wang, Xin Zhang, #Zhixiang Xu, Huiju Gao\*. Simultaneous determination of three trace organophosphorus pesticide residues in vegetables using molecularly imprinted solid-phase extraction coupled with high performance liquid chromatography. *Food Analytical Methods*, 2015. DOI 10.1007/s12161-014-0086-2 (IF 1.802)
- (23) Zhixiang Xu, Jie Zhou, Dongyan Zhao, Xuguang Qiao, Jianmei Yang. Determination of trace Para Red residues in foods through on-line molecularly imprinted solid phase extraction coupled with high-performance liquid chromatography. *Journal of Food Science*, 2010, 75: C49–C55. (IF 1.791)
- (24) Zhixiang Xu, Huiju Gao, Limin Zhang, Xueqing Chen, Xuguang Qiao\*. The biomimetic immunoassay based on molecularly imprinted polymer: A comprehensive review of recent progress and future prospects. *Journal of Food Science*, 2011, 77: R69–R75. (IF 1.791)
- (25) Zhixiang Xu, Jiaming Song, Dongyan Zhao, Jie Zhou, and Xuguang Qiao. Preparation and characterization of hydrophilic olaquindox molecularly imprinted polymer in aqueous environment. *International Journal of Polymer Analysis and Characterization*, 2011, 16: 67–77. (IF 1.487)
- (26) Longhua Xu, Dongyan Zhao, Jiaming Song, Zhixiang Xu\*, Jie Zhou. Preparation of an epichlorohydrine modified chitosan microsphere functionalized materials and adsorption

- characterization toward olaquindox. International Journal of Polymer Analysis and Characterization, 2011, 16: 118–126. (IF 1.487)
- (27) Xu Zhixiang, Wang Shuo, Fang Guozhen, Song Jiajia, Zhang Yan. On-line SPE coupled with LC for analysis of traces of Sudan dyes in foods. Chromatographia, 2010, 71: 397–403. (IF 1.370)
- (28) Xin Junhong, Zhao Dongyan, Zhang Limin, Xu Zhixiang\*, Zhou Jie, Qu Dejing. Determination of trace Sudan IV residues in foods through molecularly imprinted SPE coupled with LC. Chromatographia, 2011, 73: 235–242. (IF 1.370)
- (29) Xu Longhua, Zhang Limin, Qiao Xuguang, Xu Zhixiang\*, Song Jiaming. Determination of trace acrylamide in potato chip and bread crust based on SPE and HPLC. Chromatographia, 2012, 75: 269–274. (IF 1.370)
- (30) Zhang Jing, Xie L. Chao, Cong Li, Xu Z. Xiang\*, Qiao X. Guang & Song J. Ming. Separation and determination of trace environmental estrogen through molecularly imprinted solid phase extraction coupled to high performance liquid chromatography. Journal of Environmental Science and Health, Part A, 2012, 47: 1889–1896. (IF 1.135)
- (31) Dongyan Zhao, Xuguang Qiao, Zhixiang Xu\*, Rui Xu and Zhenhua Yan. Determination of olaquindox in chick feed samples by biomimetic enzyme-linked immunosorbent assay method based on a hydrophilic molecularly imprinted polymer film. Journal of Immunoassay and Immunochemistry, 2013, 34: 16–29. (IF 0.727)
- (32) Zhixiang Xu, Limin Zhang, Yue Zhang, Xuguang Qiao and Jie Zhou. Preparation and characterization of a novel surface molecularly imprinted polymer for selective recognition of Sudan III. Journal of Macromolecular Science Part B: Physics, 2012, 51: 2113–2121. (IF 0.619)
- (33) Yongju Zhang, Dehong Tang, Limin Zhang, Zhixiang Xu\*. Preparation and recognition behavior characterization of a moncrotophos molecularly imprinted polymer. Journal of Macromolecular Science Part B: Physics, 2013, 52: 1082–1091. (IF 0.619)
- (34) Qing Sun, Xuguang Qiao, Yang Zhao & Zhixiang Xu\*. Synthesis of an organic-inorganic hybrid polymeric material and its adsorption performance characterization toward acrylamide. Journal of Macromolecular Science Part B: Physics, 2014, 53: 683–692. (IF 0.619)
- (35) Chen Shi, Bingye Dai, Min Liu & Zhixiang Xu\*. Preparation of an Estriol Surface Imprinted Polymer and its Adsorption Ability Evaluation. Journal of Macromolecular Science Part B: Physics, 2014, 53: 662–672. (IF 0.619)

### 3. 申请和授权专利

- (1) 徐志祥, 宋佳明, 徐龙华. 噬乙醇流动注射分子印迹-化学发光在线联用检测方法, 专利号: ZL 2011 1 0265788.5. (已授权)

- (2) 徐志祥, 孟玲, 乔旭光. 敌百虫仿生酶联免疫吸附检测方法, 专利号: ZL 2011 1 0213929.9. (已授权)
- (3) 徐志祥, 辛军红, 乔旭光. 一种同时检测敌百虫和久效磷的方法, 专利号: ZL 2011 1 0316910.7. (已授权)
- (4) 徐志祥, 王玺龙, 赵涛. 一种同时检测九种有机磷农药的方法. 专利号: ZL 2013 1 0352371.1. (已授权)
- (5) 王硕, 徐志祥, 方国臻. 苏丹红I号吸附功能材料的合成方法, 专利号: CN200710057147.4. (已授权)
- (6) 王硕, 徐志祥, 方国臻, 张燕, 徐蓓. 痕量苏丹红III号的快速检测方法, 专利号: CN200710059342.0. (已授权)
- (7) 方国臻, 徐志祥, 王硕, 刘冰. 一种敌敌畏选择性分离功能材料的合成方法, 专利号: CN200810151244.4. (已授权)
- (8) 徐志祥, 孙卿, 徐龙华. 一种丙烯酰胺酶标记仿生免疫分析方法. 申请号: 201310352244.1.
- (9) 徐志祥, 唐清华, 王玺龙. 一种磁分离-气相色谱检测十种有机磷农药方法. 申请号: 201410128462.1.
- (10) 徐志祥, 李金旺, 张璐, 张永菊. 一种低丙烯酰胺保健薯条及其制备方法. 申请号: 201410606225.1.
- (11) 徐志祥, 时辰, 高绘菊. 一种酶标记仿生免疫分析检测敌百虫和乙酰甲胺磷的方法. 申请号: 201410669510.8.
- (12) 徐志祥, 王情情, 张昕. 一种同时检测三种有机磷农药的方法. 申请号: 201410668930.4.

#### 4. 鉴定成果

- (1) 徐志祥, 李丽清, 等. 基于分子识别的优势出口农产品中喹乙醇痕量残留检测技术研究, 2011.11.19通过泰安市科技局组织的专家鉴定, 达到国际领先水平。
- (2) 徐志祥, 张丽敏, 等. 基于分子识别的农产品中有机磷农药痕量残留检测技术研究, 2012.10.13通过山东省教育厅组织的专家鉴定, 达到国际领先水平。
- (3) 徐志祥, 赵冬艳, 等. 基于水相分子印迹技术的喹乙醇痕量残留检测, 2013.11.9通过山东省教育厅组织的专家鉴定, 达到国内领先水平。
- (4) 张丽敏, 戴炳业, 徐志祥, 等. 有机磷农药新型检测方法研究及其在葡萄酒检测中的应用, 2013.11.9通过山东省教育厅组织的专家鉴定, 达到国内领先水平。

#### 5. 编著专著、教材

- (1) 高等学校“十二五”规划教材: 《食品安全学》, 科学出版社, 副主编, 2012;
- (2) 专著: 《酶联免疫吸附分析方法》, 科学出版社, 参编, 2011.

#### 6. 获得奖励

研究成果先后获得了山东省科技进步三等奖、泰安市科技进步三等奖等科技奖励8项。

欢迎有志从事食品安全与质量控制领域研究的食品质量与安全、食品科学、分析化学、有机化学等相关专业学生报考研究生。

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