

首页 学院概况 专业设置 机构设置 科学研究 学科建设 教师队伍 人才培养 资料下载 合作交流 党团建设

研海博法
怀德勉行



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教育及工作经历：

2015.01- 副教授，食品科学与工程学院，中国海洋大学

2009.9-2015.1，就读于中国海洋大学水产品加工及贮藏工程专业，获博士学位。

2013.8-2014.12，赴美国马里兰大学（University of Maryland, College Park）和美国食品药品监督管理局/食品安全与应用营养中心（FDA/CFSAN），联合培养16个月。

2005.9-2009.7，就读于陕西师范大学食品工程与营养科学学院，获学士学位；

教学工作：承担本科生《食品工程原理》和《食品工程原理实验》等课程

研究方向：矿物质（尤其是铁、锌和钙）营养吸收和微藻食品开发。

主持或参加科研项目（课题）：

1. 国家自然科学基金青年基金，No. 31601406，海洋聚球藻源纳米多聚磷酸体中钙、铁和锌的生物可利用性研究，2017/01-2019/12，20万元，在研，主持；
2. 中国博士后科学基金面上资助，No. 2015M582142，食物铁强化对肠道抵抗力的负面影响及其矫正实验研究，2016/01-2017/12，5万元，在研，主持；
3. 山东省自然科学基金博士基金，No. ZR2016CB30，海洋聚球藻源纳米多聚磷酸体的益生作用研究，2016/11-2018/11，7万元，在研，主持；
4. 山东省博士后创新基金，2016/09-2018/8，6万元，在研，主持；
5. 青岛市应用基础研究项目，No. 16-5-1-16-jch，2016/09-2018/8，10万元，在研，主持；
6. 国家自然科学基金面上项目，No. 31371758，鳀鱼“肉因子”机制之纳米铁氧化物在胃肠道的形成和生物可利用性研究，2014/01-2017/12，83万元，在研，参与；
7. 国家自然科学基金青年科学基金项目，No. 31101379，鱼鳞蛋白肽-钙螯合物的有效制备、结构表征及其促钙吸收效果与机制研究，2012/01-2014/12，已结题，参与；
8. 山东省科技计划项目，No. 2013GHY11536，高产嗜铁素海洋聚球藻的高效制备关键技术研究，2013/01-2014/12，20万元，已结题，参与。

发表的学术论文：

- (1) Guangxin Feng, Yinong Feng, Tengjiao Guo, Yisheng Yang, Wei Guo, Min Huang, **Haohao Wu***, Mingyong Zeng*. Biogenic Polyphosphate Nanoparticles from *Synechococcus* sp. PCC 7002 Exhibit Intestinal Protective Potential in Human Intestinal

Epithelial Cells In Vitro and Murine Small Intestine Ex Vivo. *Journal of Agricultural and Food Chemistry*, 2018, DOI: 10.1021/acs.jafc.8b03381.

- (2) Yuhong Yang, **Haohao Wu** (共同第一), Shiyuan Dong*, Weiya Jin, Kaining Han, Yanmei Ren, Mingyong Zeng. Glycation of fish protein impacts its fermentation metabolites and gut microbiota during in vitro human colonic fermentation. *Food Research International*, 2018, DOI: 10.1016/j.foodres.2018.07.015.
- (3) Feifei Lin, **Haohao Wu***, Mingyong Zeng*, Guangli Yu, Shiyuan Dong, Huicheng Yang. Probiotic/prebiotic correction for adverse effects of iron fortification on intestinal resistance to Salmonella infection in weaning mice. *Food & Function*, 2018, 9:1070-1078.
- (4) Suqin Zhu, Min Huang, Guangxin Feng, Yu Miao, **Haohao Wu***, Mingyong Zeng*, Y. Martin Lo. Gelatin versus its two major degradation products, prolyl-hydroxyproline and glycine, as supportive therapy in experimental colitis in mice. *Food Science & Nutrition*, 2018, 6(4):1023-1031.
- (5) Yaqun Zou, Liang Zhao, Guangxin Feng, Yu Miao, **Haohao Wu***, Mingyong Zeng*. Characterization of Key Factors of Anchovy (*Engraulis japonicus*) Meat in the Nanoparticle-Mediated Enhancement of Non-Heme Iron Absorption. *Journal of Agricultural and Food Chemistry*, 2017, 65(51):11212-11219.
- (6) Liang Zhao, **Haohao Wu***, Mingyong Zeng*, Hai Huang. Nonheme Iron-Loading Capacities of Anchovy (*Engraulis japonicus*) Meat Fractions under Simulated Gastrointestinal Digestion. *Journal of Agricultural and Food Chemistry*, 2017, 65(1):174-181.
- (7) **Haohao Wu**, Yi Liu, Meng Li, Yu Chong, Mingyong Zeng, Y. Martin Lo, Jun-Jie Yin*. Size-dependent tuning of horseradish peroxidase bioreactivity by gold nanoparticles. *Nanoscale*, 2015, 7(10):4505-4513.

- (8) **Haohao Wu**, Suqin Zhu, Mingyong Zeng*, Zunying Liu, Shiyuan Dong, Yuanhui Zhao, Hai Huang. Enhancement of non-heme iron absorption by anchovy (*Engraulis japonicus*) muscle protein hydrolysate involves a nanoparticle-mediated mechanism. *Journal of Agricultural and Food Chemistry*, 2014, 62(34):8632-8639.
- (9) **Haohao Wu**, Zunying Liu, Shiyuan Dong, Yuanhui Zhao, Hai Huang, Mingyong Zeng*. Formation of ferric oxyhydroxide nanoparticles mediated by peptides in the anchovy (*Engraulis japonicus*) muscle protein hydrolysate. *Journal of Agricultural and Food Chemistry*, 2013, 61(1):219-224.
- (10) **Haohao Wu**, Zunying Liu, Yuanhui Zhao, Mingyong Zeng*. Enzymatic preparation and characterization of iron-chelating peptides from anchovy (*Engraulis japonicus*) muscle protein. *Food Research International*, 2012, 48(2): 435-441.
- (11) **Haohao Wu**, Jun-Jie Yin, Wayne G. Warner, Mingyong Zeng, Y. Martin Lo. Reactive oxygen species-related activities of nano-iron metal and nano-iron oxides. *Food and Drug Analysis*, 2014, 22(1): 86-94.
- (12) Yi Liu, **Haohao Wu**, Yu Chong, Wayne G. Warner, Qingsu Xia, Lining Cai, Zhihong Nie, Peter P. Fu, Junjie Yin*. Platinum nanoparticles: efficient and stable catechol oxidase mimetics. *ACS Applied Materials & Interfaces*, 2015, 7(35).
- (13) Suqin Zhu, **Haohao Wu**, Zunying Liu, Mingyong Zeng*. The involvement of bacterial quorum sensing in the spoilage of refrigerated *Litopenaeus vannamei*. *International Journal of Food Microbiology*, 2015, 192: 26-33.
- (14) Suqin Zhu, **Haohao Wu**, Mingyong Zeng*, Zunying Liu, Yuanhui Zhao, Shiyuan Dong. Regulation of Spoilage-Related Activities of *Shewanella putrefaciens* and *Shewanella baltica* by an Autoinducer-2 Analogue, (Z)-5-(Bromomethylene) furan-2 (5H)-One, *Journal of Food Processing and Preservation*, 2015, 39: 719-728.
- (15) Yi Liu, **Haohao Wu**, Meng Li, JunJie Yin*, Zhihong Nie*. pH dependent catalytic

activities of platinum nanoparticles with respect to the decomposition of hydrogen peroxide and scavenging of superoxide and singlet oxygen. *Nanoscale*, 2014, 6(20): 11904-11910.

(16) Weiwei He, **Haohao Wu**, Wayne G Wamer, Hyun-Kyung Kim, Jiwen Zheng, Huimin Jia, Zhi Zheng, Junjie Yin*. Unraveling the enhanced photocatalytic activity and phototoxicity of ZnO/metal hybrid nanostructures from generation of reactive oxygen species and charge carriers. *ACS Applied Materials & Interfaces*, 2014, 6(17): 15527-15535.

(17) Caili Zhang, Suqin Zhu, **Haohao Wu**, Abdul-Nabi Jatt, Yurong Pan, Mingyong Zeng*. Quorum Sensing Involved in the Spoilage Process of the Skin and Flesh of Vacuum-Packaged Farmed Turbot (*Scophthalmus maximus*) Stored at 4 °C. *Journal of Food Science*, 2016, 81: M2776–M2784.

(18) Jo-Won Lee, Sohee Yoon, Y. Martin Lo, **Haohao Wu**, Sook-Young Lee, BoKyung Moon. Intrinsic polyphenol oxidase-like activity of gold@ platinum nanoparticles. *RSC Advances*, 2015, 5(78): 63757-63764.

(19) Meng Li, Weiwei He, Yi Liu, **Haohao Wu**, Wayne G Wamer, Y Martin Lo, Junjie Yin*. FD&C Yellow No. 5 (Tartrazine) degradation via reactive oxygen species triggered by TiO₂ and Au/TiO₂ nanoparticles exposed to simulated sunlight. *Journal of Agricultural and Food Chemistry*, 2014, 62(49): 12052-12060.

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Education

Ph.D. in Aquatic Product Processing and Preserving Engineering, College of Food Science and Engineering, Ocean University of China, China. 2015.

B. S. in Food Science and Engineering, College of Food Engineering and Nutritional Science, Shaanxi Normal University, China. 2009

Appointment

2015 --now Department of Food Science and Engineering, Ocean University of China

Research Abstract

Mineral nutrition: Utilizing the low-valued fish, seafood processing by-products and microalgae to improve mineral absorption;

Biological effects of food-related nanomaterials: Understanding the toxic or beneficial effects of nanomaterials in food and food-related products after oral exposure.