

郭伊苻教授委员会聘期工作公示

一、 主要研究方向或领域

研究方向为能源与环境催化，主要开展的工作包括环境友好型催化材料的设计及其在生物质转化、污染物控制和清洁能源生产中的性能研究。

二、 主要学术兼职

中国多酸化学学术委员会委员。

三、 聘期内推动学科建设成效

聚焦国际科学研究前沿，面向国家和我省重大战略需求，带领本学科不断凝练科学研究方向，在环境友好型催化材料的设计及其转化生物质合成新一代油品、高效降解有机污染物和清洁能源生产中的性能研究方面取得了一系列高水平和创新性的研究成果，受到了国际和国内同行的认可，并在国际学术界具有一定的影响力，发表了多篇高水平学术论文，其中包括 5 篇高被引论文。聘期内的科学研究为实现我国的“双碳”战略目标提供了基础研究成果，多次入选 Elsevier 中国高被引学者。在我校上一轮“生态学”学科评估和本轮“环境科学与工程”学科评估中做出突出贡献，分别提供了“高被引学者”、“国际知名学者”、“教育部高等学校科学研究优秀成果奖自然科学奖二等奖（第一完成人）”和多篇高水平学术论文。此外，在今年获批的“东北水污染低碳治理与绿色发展教育部工程中心”也做出了重要贡献。

四、 人才培养情况

培养的一名博士生获 2019 年吉林省优秀博士学位论文

五、 聘期内取得的主要科研和教学成果

1. 学术论文

[1] M. Ren, X. Y. Zhang, Y. Q. Liu, G. Yang, L. Qin, J. Q. Meng, **Y. H. Guo***, Y. X. Yang*, Interlayer palladium-single-atom-coordinated cyano-group-rich graphitic carbon nitride for enhanced photocatalytic hydrogen production performance, *ACS Catal.* **2022**, 12, 5077–5093. (中科院一区)

[2] X. Y. Zhang, Y. Q. Liu, M. Ren, G. Yang, L. Qin, **Y. H. Guo***, J. Q. Meng*, Precise carbon doping regulation of porous graphitic carbon nitride nanosheets enables elevated

photocatalytic oxidation performance towards emerging organic pollutants, *Chem. Eng. J.* **2022**, 433, 134551. (中科院一区)

[3] D. Y. Song*, X. F. Liu, S. Khan, C. Y. Zhang, Y. H. Guo*, Nitrogen-rich macroporous covalent triazine frameworks bearing sulfonic acid-based ionic liquids for microwave-assisted conversion of fructose to 5-hydroxymethylfurfural, *Fuel*, **2022**, 327, 125230. (中科院一区)

[4] Y. Q. Liu, M. Ren, X. Y. Zhang, G. Yang, L. Qin, J. Q. Meng*, Y. H. Guo*, Supramolecule self-assembly approach to direct Z-scheme TiO₂/g-C₃N₄ heterojunctions for efficient photocatalytic degradation of emerging phenolic pollutants, *Appl. Surf. Sci.* **2022**, 593, 153401. (中科院一区)

[5] X. Y. Wang, J. Q. Meng, X. Y. Zhang, Y. Q. Liu, M. Ren, Y. X. Yang*, Y. H. Guo*, Controllable approach to carbon-deficient and oxygen-doped graphitic carbon nitride: robust photocatalyst against recalcitrant organic pollutants and the mechanism insight, *Adv. Funct. Mater.* **2021**, 2010763. (中科院一区)

[6] J. Q. Meng, X. Y. Wang, Y. Q. Liu, M. Ren, X. Y. Zhang, X. H. Ding, Y. H. Guo*, Y. X. Yang*, Acid-induced molecule self-assembly synthesis of Z-scheme WO₃/g-C₃N₄ heterojunctions for robust photocatalysis against phenolic pollutants, *Chem. Eng. J.* **2021**, 403, 126354. (中科院一区)

[7] X. Y. Zhang, X. Y. Wang, J. Q. Meng, Y. Q. Liu, M. Ren, Y. H. Guo*, Y. X. Yang*, Robust Z-scheme g-C₃N₄/WO₃ heterojunction photocatalysts with morphology control of WO₃ for efficient degradation of phenolic pollutants, *Sep. Purif. Technol.* **2021**, 255, 117693. (中科院一区)

[8] Q. Q. Zhang, C. Y. Zhang, Q. Y. Wu, J. Y. Liu, D. Y. Song*, Y. H. Guo*, Sustainable production of biodiesel and transformation of glycerol to glycerol laurate esters over inner diameter-controlled sulfonic acid functionalized ethyl-bridged-organosilica nanotubes, *Appl. Catal. A: Gen.* **2021**, 611, 117973. (中科院二区)

[9] J. Y. Liu, C. Y. Zhang, D. Y. Song*, Y. H. Guo*, J. Y. Leng*, Efficient transformation of 5-hydroxymethylfurfural to ethyl levulinate over the Brønsted acidic ionic liquid functionalized dendritic fibrous nanosilica spheres, *Micropor. Mesopor. Mater.* **2021**, 326, 111354. (中科院二区)

[10] J. Q. Meng, X. Y. Zhang, Y. Q. Liu, M. Ren, Y. H. Guo*, X. Yang*, Y. X. Yang*,

Engineering of graphitic carbon nitride with simultaneous potassium doping sites and nitrogen defects for notably enhanced photocatalytic oxidation performance, *Sci. Total Environ.* **2021**, 796, 148946. (中科院二区)

[11] Q. Q. Zhang, M. Ren, Y. Q. Liu, C. Y. Zhang, **Y. H. Guo**, D. Y. Song*, Fabrication of Brønsted acidic ionic liquids functionalized organosilica nanospheres for microwave-assisted fructose valorization, *Sci. Total Environ.* **2022**, 818, 151761. (中科院二区)

[12] D. Y. Song, J. Y. Liu, C. Y. Zhang, **Y. H. Guo***, Design of Brønsted acidic ionic liquid functionalized mesoporous organosilicananospheres for efficient synthesis of ethyl levulinate and levulinic acid from 5-hydroxymethylfurfural, *Catal. Sci. Technol.* **2021**, 11, 1827–1842. (中科院二区)

[13] X. Y. Wang, L. Y. Li, J. Q. Meng, P. Y. Xia, Y. X. Yang*, **Y. H. Guo***, Enhanced simulated sunlight photocatalytic reduction of an aqueous hexavalent chromium over hydroxyl-modified graphitic carbon nitride, *Appl. Surf. Sci.* **2020**, 506, 144181. (中科院一区)

[14] Y. Q. Liu, P. Y. Xia, L. Y. Li, X. Y. Wang, J. Q. Meng, Y. X. Yang*, **Y. H. Guo***, In-situ route for the graphitized carbon/TiO₂ composite photocatalysts with enhanced removal efficiency to emerging phenolic pollutants, *Chin. J. Catal.* **2020**, 41, 1378–1392. (中科院一区)

[15] Y. N. Sun, Q. Q. Zhang, C. Y. Zhang, J. Y. Liu, **Y. H. Guo***, D. Y. Song*, In situ approach to dendritic fibrous nitrogen-doped carbon nanospheres functionalized by Brønsted acidic ionic liquid and their excellent esterification catalytic performance, *ACS Sustainable Chem. Eng.* **2019**, 7, 15114–15126. (中科院一区)

[16] J. Q. Meng, X. Y. Wang, X. Yang, A. Hu, **Y. H. Guo***, Y. X. Yang*, Enhanced gas-phase photocatalytic removal of aromatics over direct Z-scheme-dictated H₃PW₁₂O₄₀/g-C₃N₄ film-coated optical fibers, *Appl. Catal. B: Environ.* **2019**, 251, 168–180. (中科院一区)

[17] D. Y. Song, P. P. Zhang, Y. N. Sun, Q. Q. Zhang, **Y. H. Guo***, Design of periodic mesoporous sulfonic acid and titanium bi-functionalized alkyl-bridged organosilica hybrid catalysts for efficient synthesis of ethyl levulinate, *Micropor. Mesopor. Mater.* **2019**, 279, 352–363. (中科院二区)

[18] Q. Q. Zhang, C. Y. Zhang, Y. N. Sun, Y. H. Guo*, D. Y. Song*, Hierarchically porous Brønsted acidic ionic liquid functionalized nitrogen-doped carbons for pyrolysis biofuel upgrading *via* esterification of acetic acid with high boiling point alcohols, *Appl. Catal. A: Gen.* **2019**, 574, 10–24. (中科院二区)

[19] X. Y. Wang, J. Q. Meng, X. Yang, A. Hu, Y. X. Yang*, Y. H. Guo*, Fabrication of a perylene tetracarboxylic diimide-graphitic carbon nitride heterojunction photocatalyst for efficient degradation of aqueous organic pollutants, *ACS Appl. Mater. Interfaces* **2019**, 11, 588–602. (中科院一区)

[20] P. P. Zhang, Y. N. Sun, Q. Q. Zhang, Y. H. Guo*, D. Y. Song*, Upgrading of pyrolysis biofuel *via* esterification of acetic acid with benzyl alcohol catalyzed by Brønsted acidic ionic liquid functionalized ethyl-bridged organosilica hollow nanospheres, *Fuel* **2018**, 228, 175–186. (中科院一区)

[21] D. Y. Song, Q. Q. Zhang, Y. N. Sun, P. P. Zhang, Y. H. Guo*, J. L. Hu*, Design of ordered mesoporous sulfonic acid functionalized ZrO₂/organosilica bifunctional catalysts for direct catalytic conversion of glucose to ethyl levulinate, *ChemCatChem* **2018**, 10, 4953–4965. (中科院二区)

[22] Y. N. Sun, Q. Q. Zhang, P. P. Zhang, D. Y. Song*, Y. H. Guo*, Nitrogen-doped carbon-based acidic ionic liquid hollow nanospheres for efficient and selective conversion of fructose to 5-ethoxymethylfurfural and ethyl levulinate, *ACS Sustainable Chem. Eng.* **2018**, 6, 6771–6782. (中科院一区)

[23] S. An, D. Y. Song, Y. N. Sun, Q. Q. Zhang, P. P. Zhang, Y. H. Guo*, Conversion of furfuryl alcohol to levulinic acid in aqueous solution catalyzed by shell thickness-controlled arenesulfonic acid-functionalized ethyl-bridged organosilica hollow nanospheres, *ACS Sustainable Chem. Eng.* **2018**, 6, 3113–3123. (中科院一区)

[24] Y. N. Sun, J. L. Hu, S. An, Q. Q. Zhang, Y. H. Guo*, D. Y. Song*, Q. K. Shang*, Selective esterification of glycerol with acetic acid or lauric acid over rod-like carbon-based sulfonic acid functionalized ionic liquids, *Fuel* **2017**, 207, 136–145. (中科院一区)

[25] D. Y. Song, Y. N. Sun, Q. Q. Zhang, P. P. Zhang, Y. H. Guo*, J. Y. Leng*, Fabrication of propylsulfonic acid functionalized SiO₂ core/PMO shell structured PrSO₃H-SiO₂@Si(R)Si nanospheres for the effective conversion of D-fructose into ethyl

levulinate, *Appl. Catal. A: Gen.* 2017, 546, 36–46. (中科院二区)

2. 科（教）研项目

[1] 磺酸官能化有机硅杂化纳米催化剂的形貌调控及其性能研究，国家自然科学基金面上项目（批准号：21573038），77.8 万元，2016.01–2019.12，主持。

[2] 氮掺杂碳负载型 Brønsted 酸性离子液体的形貌调控与催化性能研究，国家自然科学基金面上项目（批准号：22072016），63 万元（直接经费），2021.01–2024.12，主持。

3. 科研教学获奖

环境催化材料的设计及其在生物质转化和有机污染物控制中的应用，教育部高等学校科学研究优秀成果奖自然科学奖二等奖，2017（第一完成人）。