宋强 硕士生导师

职　　称：副教授

职　　务：无

研究方向：固废资源化

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个人简介

致力于固废资源化研究，包括煤基固废综合利用、低碳节能建筑墙材和有机质高效清洁转化。主持国家自然科学基金青年基金、国家自然科学基金专项项目课题、山东省高等学校优秀青年教师创新团队基金、山东省自然科学基金、山东省博士后创新项目、青岛市博士后应用研究项目及多个省部级开放课题，参与国家重点研发计划、中央引导地方科技发展资金项目和山东省重点研发计划等。Cement and Concrete Composites，Journal of Cleaner Production，Construction and Building Materials，Energy Conversion and Management，Fuel 和硅酸盐学报等发表高水平学术论文 30 余篇。高被引和热点论文 3 篇，授权专利 3 项，参编行业和协会标准 2 项，获得中国材料研究学会科技进步一等奖、建筑材料创新二等奖和中国商业联合会科技进步三等奖。

学习经历

- 2016.09-2019.07，中国矿业大学（北京），矿物加工工程，工学博士

工作经历

- 2019.09-2021.12，青岛理工大学土木工工程学院，博士后；
- 2022.01-　至今，青岛理工大学土木工程学院，副教授。

学术兼职

- 2023.01-至今，Ei 期刊《煤炭科学技术》青年编委；
- 2022.01-至今，《矿产保护与利用》青年编委；
- 2023.03-至今，《矿冶工程》青年编委。

教科研项目

- 2024.01-2026.12，国家自然科学基金专项项目，基于低碳建筑目标的混凝土材料-结构一体化设计理论与方法，合作单位负责人，60 万；
- 2024.01-2026.12，横向课题，城市固废建材化利用关键技术研究，主持，10 万；
- 2024.01-2025.12，横向课题，固废胶凝材料制备及道路工程应用研究，主持，30 万；
- 2023.01-2025.12，山东省高等学校青创科技计划创新团队，绿色建筑外墙节能保温材料设计与应用关键技术，主持，10 万；
- 2025.01-2026.12，临汾市重点研发计划，煤矸石钢渣充填材料制备关键技术研究，合作单位负责人，10 万；
- 2021.01-2023.12，山东省自然科学基金青年基金，主持，结题；
- 2022.01-2024.12，国家自然科学基金青年科学基金项目，主持，结题；
- 2021.01-2022.12，西部煤炭绿色安全开发国家重点实验室开放课题，主持，结题；
- 2021.01-2023.12，自然资源部煤炭资源勘查与综合利用重点实验室开放课题，主持，结题。

学术成果

代表性著作、论文：

[1] Song qiang, Zou yingjie, Zhang peng, et al. Novel high-efficiency solid particle foam stabilizer: effects of modified fly ash on foam properties and foam concrete[J]. Cement and Concrete Composites, 2025, 155, 105818.

[2] Song qiang, Zou yingjie, Xu shipeng, et al. Performance study of foam concrete prepared by the synergistic utilization of agricultural waste and coal gangue based on double orthogonal experiments[J]. Case Studies in Construction Materials, 2024, 21, e03677.

[3] Zou yingjie, Song qiang*, Zhang peng, et al. Research status of building materials utilization and CO_2 curing technology on typical coal-based solid waste: A critical review[J]. Journal of CO_2 Utilization, 2024, 84, 102860.

[4] Song qiang, Zou yingjie, Bao jiuwen, et al. Disposal of solid waste as building materials: A study on the mechanical and durability performance of concrete composed of gold tailings[J]. Journal of Materials Research and Technology, 2024, 30, 2111-2124.

[5] Song qiang, Bao jiuwen, Xue shanbin, et al. Study on the recycling of ceramic polishing slag in autoclaved aerated foam concrete by response surface methodology[J]. Journal of Building Engineering, 2022, 56, 104827.

[6] Song qiang, Zhao hongyu, Ma qingxiang, et al. Catalytic upgrading of coal volatiles with Fe_2O_3 and hematite by TG-FTIR and Py-GC/MS[J]. Fuel, 2022, 313, 122667.

[7] Song qiang, Bao jiuwen, Zhang peng, et al. Collaborative disposal of multisource solid waste: Influence of an admixture on the properties, pore structure and durability of foam concrete [J]. Journal of Materials Research and Technology, 2021, 14, 1778-1790.

[8] Song qiang, Zhao hongyu, Zhang peng*, et al. Study on the catalytic pyrolysis of coal volatiles over hematite for the production of light tar [J]. Journal of Analytical and Applied Pyrolysis, 2020, 151, 104927.

[9] Jia jinwei, Song qiang*, Zou fang, et al. Effect of calcium-based catalyst on pyrolysis characteristics of oil sludge and its products [J]. Energy Sources Part A-Recovery Utilization and Environmental Effects, 2020, 1806411.

[10] Song qiang, Zhao hongyu, Zhang peng *, et al. Pyrolysis of municipal solid waste with iron-based additives: A study on the kinetic, product distribution and catalytic mechanisms [J]. Journal of Cleaner Production, 2020, 258, 120682. (ESI 高倍引/热点)

[11] Song qiang*, Zhao hongyu, Shu xinqian, et al. Effects of demineralization on the surface morphology, microcrystalline and thermal transform characteristics of coal [J]. Journal of Analytical and Applied Pyrolysis, 2020, 145, 104716. (ESI 高倍引)

[12] Song qiang, Jia jinwei, Zhao hongyu*, et al. Characterization of the products obtained by pyrolysis of oil sludge with steel slag in a continuous pyrolysis-magnetic separation reactor [J]. Fuel, 2019, 255, 115711.

[13] Song qiang, Zhao hongyu, Shu xinqian *, et al. Effects of various additives on pyrolysis characteristics of municipal solid waste [J]. Waste Management, 2018, 78: 621-629.

[14] Zhao hongyu, Song qiang*, Liu shucheng, et al. Study on catalytic co-pyrolysis of physical mixture staged pyrolysis characteristics of lignite and straw over an catalytic beds of char and its mechanism [J]. Energy Conversion and Management, 2018, 161 (1): 13-26.

[15] Zhao honyu, Li yuhuan, Song qiang*, et al. Catalytic reforming of volatiles from co-pyrolysis of lignite blended with corn straw over three different structures of iron ores [J]. Journal of Analytical and Applied Pyrolysis, 2019, 144, 104714.

[16] Zhao honyu, Li yuhuan, Song qiang*, et al. Investigation on the thermal behavior characteristics and products composition of four pulverized coals: Its potential applications in coal cleaning [J]. International Journal of Hydrogen Energy, 2019, 44 (42): 23620-23638.

[17] Zhao hongyu, Wang binze, Song qiang*, et al. Effect of chemical fractionation treatment on structure and characteristics of pyrolysis products of Xinjiang long flame coal [J]. Fuel, 2018, 234(15): 1193-1204.

[18] 宋强，杨玉鑫，许世鹏，等. 煤矸石混凝土性能及提升研究进展[J].煤炭科学技术, 2025, 53(2): 402-420. (封面文章)

[19] 宋强，邹颖杰，张鹏*，等. 泡沫混凝土气泡性能与基体材料研究进展[J]. 硅酸盐学报, 2024, 52(2): 706-724.

[20] 宋强，张鹏*，鲍玖文，等. 泡沫混凝土的研究进展与应用[J]. 硅酸盐学报, 2021, 49(2):1-13.

荣誉奖励

- 2024.12，中国知网高倍引学者 TOP5%；
- 2024.12，中国商业联合会科技进步三等奖（1 位）；
- 2023.06，中国材料研究学会科学技术一等奖（9 位）；
- 2020.12，建筑材料情报研究所建筑材料创新二等奖（3 位）。