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Education

Ph.D. in Chemistry, Sichuan University (China)	2020.09-2023.12
M. S. in Polymer Chemistry and Physics, Changchun University of Technology (China)	2015.09-2018.06
B.Eng. in Materials Science and Engineering, Southwest University of Technology (China)	2011.09-2015.06

Research Interests

1. Polymer recycling;
2. Dynamic covalent chemistry;
3. Flame-retardant polymeric materials and their composites;
4. Bio-based polymers.

Professional Experience

06/2024 – Present	Postdoctoral Research Associate, Composite Materials and Engineering Center, Washington State University
01/2024 – 06/2024	Research Assistant, Department of Chemistry, Sichuan University, China
09/2020 – 12/2023	Doctoral Research Fellow, Department of Chemistry, Sichuan University, China
10/2019 – 07/2020	Research Assistant, Friedrich-Schiller-University of Jena, Germany
07/2018 – 03/2020	Research Assistant, Nankai University, China

PUBLICATION

1. **Gu, Song**; Zhao, Baoming; Brito, de Figueiredo Gustavo; Chen, Li; Zhang, Jinwen*. Selective bond cleavage strategies for chemical recycling of thermosets and their composites. **Progress in Polymer Science**, 2026, 173, 102069.
2. **Gu, Song**; Xiao, Yan-Fang; Tan, Shi-Huan; Guo, De-Ming; Liu, Bo-Wen; Wang, Yu-Zhong; Chen, Li*. Neighboring molecular engineering in Diels-Alder chemistry enabling easily recyclable carbon fiber reinforced composites. **Angewandte Chemie International Edition**, 2023, 62, e202312638.
3. **Gu, Song**; Xu, Shao-Dong; Lu, Jia-Hui; Pu, Xiao-Lu; Ren, Qing-Ruo; Xiao, Yan-Fang; Wang, Yu-Zhong; Chen, Li*. Phosphonate-influenced Diels-Alder chemistry towards multi-path recyclable, fire safe thermoset and its carbon fiber composites. **EcoMat**, 2023, 5, e12388.
4. **Gu, Song**; Zhao, Jia-Xin; Wang, Yu-Zhong; Chen, Li*. Towards sustainable and fire-safe thermosets using phosphorus-containing covalent adaptable networks. **ChemPlusChem**, 2024, e202400341.
5. **Gu, Song**; Zhao, Jia-Xin; Tan, Shi-Huan; Xiao, Yan-Fang; Wang, Yu-Zhong; Chen, Li*. High-performance yet sustainable epoxy composites: From Diels-Alder chemistry to hydrazinolytic degradation. **Materials Horizons**, 2025, 12, 7520-7530.
6. Qin, Zhen; Zhang, Yue-Rong; Wu, Shu-Gen; **Gu, Song**; Liu, Chuan; Wang, Yu-Zhong; Chen, Li*. MXene-engineered multifunctional epoxy vitrimers uniting self-healing, fire safety, and component recyclability in carbon fiber composites. **Chemistry of Materials**, 2025, <https://doi.org/10.1021/acs.chemmater.5c01512>.

7. Xiao, Yan-Fang; **Gu, Song**; He, Feng-Min; Wang, Yi; Liu, Chuan; Wang, Yu-Zhong; Chen, Li*. Towards superb toughness, strength, and flame retardancy in epoxy resins via molecular interface engineering. **Composites Part B: Engineering**, 2025, 297, 112293.
8. Zhang, Yue-Rong; **Gu, Song**; Wang, Yu-Zhong; Chen, Li*. Intrinsically flame-retardant epoxy vitrimers with catalyst-free multi-reprocessability towards sustainable carbon fiber composites. **Sustainable Materials and Technologies**, 2024, 40, e00883.
9. Zhang, Yue-Rong; Qin, Zhen; **Gu, Song**; Zhao, Jia-Xin; Xiang, Xian-Yue; Liu, Chuan; Wang, Yu-Zhong; Chen, Li*. Flame-retardant, recyclable, and hydrothermally degradable epoxy resins and their degradation products for high-strength adhesives. **Frontiers of Chemical Science and Engineering**, 2024, 18, 146.
10. Ren, Qing-Ruo; **Gu, Song**; Liu, Jing-Hong; Wang, Yu-Zhong; Chen, Li*. Catalyst-free reprocessable, degradable and intrinsically flame-retardant epoxy vitrimer for carbon fiber reinforced composites. **Polymer Degradation and Stability**, 2023, 211, 110315.
11. Ren, Qing-Ruo; **Gu, Song**; Wang, Yu-Zhong; Chen, Li*. A phosphonate-derived epoxy vitrimer with intrinsic flame retardancy and catalyst-free reprocessability. **Journal of Polymer Science**, 2024, 62, 3195.
12. Xu, Shao-Dong; **Gu, Song**; Pu, Xiao-Lu; Xiao, Yan-Fang; Lu, Jia-Hui; Wang, Yu-Zhong; Chen, Li*. Reaction-induced phase separation towards in situ network in epoxy resins for simultaneously improving thermal conductivity and fire safety. **Composites Part B: Engineering**, 2022, 247, 110326.
13. Xu, Shao-Dong; **Gu, Song**; Pu, Xiao-Lu; Xiao, Yan-Fang; Lu, Jia-Hui; Wang, Yu-Zhong; Chen, Li*. In situ phase separation of novel phosphorus-containing polyester in epoxy resins towards simultaneously improved thermal conductivity and fire safety. **Polymer Degradation and Stability**, 2022, 204, 110113.
14. Pu, Xiao-Lu; **Gu, Song**; Xiao, Yan-Fang; Wang, Yu-Zhong; Chen, Li*. Novel organophosphonate-decorated WS2 nanosheets towards flame retardancy and mechanical enhancement of epoxy resin. **Polymer Degradation and Stability**, 2022, 206, 110170.
15. Gao, Yang; **Gu, Song**; Jia, Fei*; Zhang, Qian; Gao, Guang-Hui*. "All-in-one" hydrolyzed keratin protein-modified polyacrylamide composite hydrogel transducer. **Chemical Engineering Journal**, 2020, 398, 1385.
16. Gao, Yang; **Gu, Song**; Jia, Fei*; Gao, Guang-Hui*. A skin-matchable, recyclable and biofriendly strain sensor based on a hydrolyzed keratin-containing hydrogel. **Journal of Materials Chemistry A**, 2020, 8, 24175.
17. Gao, Yang; **Gu, Song**; Duan, Li-Jie*; Wang, Yuan-Rui*; Gao, Guang-Hui. Robust and anti-fatigue hydrophobic association hydrogels assisted by titanium dioxide for photocatalytic activity. **Soft Matter**, 2019, 15, 3897.
18. Xiao, Yan-Fang; Liu, Xiao-Feng; He, Feng-Min; **Gu, Song**; Wang, Yu-Zhong; Chen, Li*. A rigid-flexible integrated polyester with bis-phosphaphenanthrene pendants towards simultaneously flame-retarded and toughened epoxy resins with multifunctionalities. **Chemical Engineering Journal**, 2024, 484, 149397.
19. Pu, Xiao-Lu; Luo, Xi; Chen, Jia-Hui; Xu, Shao-Dong; **Gu, Song**; Wang, Yu-Zhong; Chen, Li*. 2D@0D multidimensional nanoparticles for improving the fire safety of epoxy resin. **ACS Applied Engineering Materials**, 2023, 1, 1, 109.
20. Lu, Jia-Hui; Li, Zhen; Chen, Jia-Hui; Li, Shu-Liang; He, Jie-Hao; **Gu, Song**; Liu, Bo-Wen; Chen, Li*; Wang, Yu-Zhong*. Adaptable phosphate networks towards robust, reprocessable, weldable, and alertable-yet-extinguishable epoxy vitrimers. **Research**, 2022, 9846940.
21. Li, Shen-Zhen; Nie, Hui-Jun; **Gu, Song**; Han, Zhong-Qiang; Han, Guang; Zhang, Wang-Qing*. Synthesis of multicompartment nanoparticles of ABC miktoarm star polymers by seeded RAFT dispersion polymerization. **ACS Macro Letters**, 2019, 8, 783.
22. Huang, Jing; Guo, Ya-Kun; **Gu, Song**; Han, Guang; Duan, Wen-Feng; Gao, Cheng-Qiang; Zhang, Wang-Qing*. Multicompartment block copolymer nanoparticles: recent advances and future perspectives. **Polymer Chemistry**, 2019, 10, 3426.
23. Cao, Hui-Liang*; Dauben, Thomas J.; Helbing, Christian; Jia, Zhi-Chao; Zhang, Yue-Chao; Huang, Moran*; Müller, Lenka; **Gu, Song**; Zhang, Xiao-Yuan; Qin, Hui*; Martin, Karin; Bossert, Jörg; Jandt, Klaus D*. The antimicrobial effect of calcium-doped titanium is activated by fibrinogen adsorption. **Materials Horizons**, 2022, 9, 1962.

24. **Gu, Song**; Duan, Li-Jie; Ren, Xiu-Yan; Gao, Guang-Hui*. Robust, tough and anti-fatigue cationic latex composite hydrogels based on dual physically cross-linked networks. **Journal of Colloid and Interface Science**, 2017, 492, 119.
25. **Gu, Song**; Cheng, Gui-Ru; Yang, Tian-Yu; Ren, Xiu-Yan*; Gao, Guang-Hui. Mechanical and rheological behavior of hybrid cross-linked polyacrylamide/cationic micelle hydrogels. **Macromolecular Materials and Engineering**, 2017, 302, 1700402.
26. **Gu, Song**; Gao, Yang; Ren, Xiu-Yan; Yu, Jian-Hong; Duan, Li-Jie; Gao, Guang-Hui*. The effect of methyl group on the mechanical properties of hydrophobic association hydrogel. **Journal of Polymer Science, Part B: Polymer Physics**, 2018, 56, 1505.

Conference Presentations/Posters

1. **Gu, Song**; Chen, Li*; Wang, Yu-Zhong. Neighboring molecular engineering in Diels-Alder chemistry enabling easily recyclable, fire safe thermosets and carbon fiber reinforced composites. **5th Asia-Oceania Symposium on Fire Safety Materials Science and Engineering (5th AOFSM)**, 2023, Sydney, Australia. **(Oral presentation)**
2. **Gu, Song**; Chen, Li*; Wang, Yu-Zhong. A reprocessable and intrinsically flame-retardant epoxy resin. **Annual Conference of China Flame Retardant Academic/Industry**, 2021, Xuchang, China. **(Poster)**
3. **Gu, Song**; Chen, Li*; Wang, Yu-Zhong. A reprocessable and intrinsically flame-retardant epoxy resin and its carbon fiber-reinforced composites. **National Polymer Academic Paper Conference**, 2021, Beijing, China. **(Poster)**

Awards

1. Excellent Postgraduates of Sichuan University (2022.10)
2. Excellent Master Degree Thesis (2018.06)
3. Excellent Master Graduates (2018.06)
4. National Scholarship of Postgraduates (2017.11)
5. National Encouragement Scholarship (2012.12; 2013.12; 2014.12)