



所属学院 材料科学与工程学院

学科领域 高分子合成、多肽模拟、抗菌、抗肿瘤、免疫调节

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个人简介

刘润辉，现任华东理工大学教授，博导。2009 年于美国普度大学获得博士学位。2010-2014 在美国加州理工学院和威斯康星大学－麦迪逊做博士后研究。主要从事模拟天然蛋白 / 多肽功能的合成高分子生物材料研究。作为项目负责人，主持青年千人等 2 项人才项目及 5 项省部级以上基金项目。在 **Nat. Commun.**, **J. Am. Chem. Soc.**, **Angew. Chem. Int. Ed.**, **Adv. Funct. Mater.** 等期刊作为通讯作者发表研究论文多篇。

研究方向

1. 功能化单体与聚合物的合成；多功能高分子材料的制备及合成方法研究
2. 生物相容、生物可降解高分子材料的研究与开发
3. 抗细菌、抗真菌生物材料的研制与作用机理研究
4. 具有细胞黏附、细胞选择功能的生物材料研究及在组织修复中的应用
5. 抗非特异性蛋白吸附及微生物生物膜形成的防污材料研究及在生物医学工程领域的应用
6. 蛋白类及小分子药物的体内传输和可控释放研究
7. 抗肿瘤多肽研究

研究成果及主要发表文章

1. Zhang, D.#; Liu, J.#; Chen, Q.; Jiang, W.; Wang, Y.; Xie, J.; Ma, K.; Shi, C.; Zhang, H.; Chen, M.; Wan, J.; Ma, P.; Zou, J.; Zhang, W.; Zhou, F.; Liu, R.* A Sandcastle Worm-Inspired Strategy to Functionalize Wet Hydrogels. *Nat. Commun.* 2021, 12, 6331.
2. Wu, Y.; Chen, K.; Wu, X.; Liu, L.; Zhang, W.; Ding, Y.; Liu, S.; Zhou, M.; Shao, N.; Ji, Z.; Chen, J.; Zhu, M.; Liu, R.* Superfast and Water-Insensitive Polymerization on α -Amino Acid N-Carboxyanhydrides to Prepare Polypeptides using Tetraalkylammonium carboxylates as the Initiator. *Angew. Chem. Int. Ed.* 2021. DOI: 10.1002/anie.202103540.
3. Xie, J.#; Zhou, M.#; Qian, Y.; Cong, Z.; Chen, S.; Zhang, W.; Jiang, W.; Dai, C.; Shao, N.; Ji, Z.; Zou, J.; Xiao, X.; Liu, L.; Chen, M.; Li, J.; Liu, R.* Addressing MRSA Infection and Antibacterial Resistance with Peptoid Polymers. *Nat. Commun.* 2021. DOI: 10.1038/s41467-021-26221-y.
4. Zhang, D.; Chen, Q.; Bi, Y.; Zhang, H.; Chen, M.; Wan, J.; Shi, C.; Zhang, W.; Zhang, J.; Qiao, Z.; Li, J.; Liu, Y.; Chen, S.; Liu, R.* Bio-Inspired Hydrogels Resist the Foreign-Body Response. *Nat. Commun.* 2021, 12, 5327.
5. Zhou, M.; Zou, J.; Liu, L.; Xiao, X.; Deng, S.; Wu, Y.; Xie, J.; Cong, Z.; Ji, Z.; Liu, R.* Synthesis of Poly- α -peptides with Tunable Sequence Via the Copolymerization on N-carboxyanhydride and N-thiocarboxyanhydride. *iScience*, 2021 DOI: 10.1016/j.isci.2021.103124.
6. Chen, Q.; Zhang D.; Zhang W.; Zhang H.; Zou J.; Chen M.; Li J.; Yuan Y.; Liu, R.* Dual mechanism β -amino acid polymers promoting cell adhesion. *Nature Communications* 2021, 12, 562
7. Zhang, D.; Chen, Q.; Shi, C.; Chen, M.; Ma, K.; Wan, J.; Liu, R.* Dealing with the Foreign-Body Response to Implanted Biomaterials: Strategies and Applications of New Materials. *Adv. Funct. Mater.* DOI: 10.1002/adfm.202007226.
8. Etayash, H.; Qian, Y.; Pletzer, D.; Zhang, Q.; Xie, J.; Cui, R.; Dai, C.; Ma, P.; Qi, F.; Liu, R.* Hancock, R. E. W.* Host Defense Peptide-Mimicking Amphiphilic β -Peptide Polymer (Bu:DM) Exhibiting Anti-Biofilm, Immunomodulatory, and in Vivo Anti-Infective Activity. *J. Med. Chem.* 2020, 63, 12921-12928.
9. Zhang, D.; Chen, Q.; Zhang, W.; Liu, H.; Wan, J.; Qian, Y.; Li, B.; Tang, S.; Liu, Y.; Chen, S.; Liu, R.* Silk - inspired β -peptide Materials Resist Fouling and the Foreign - body Response. *Angew. Chem. Int. Ed.* 2020, 59, 9586–9593. **(Hot Paper)**
10. Zhou, M.; Xiao, X.; Cong, Z.; Wu, Y.; Zhang, W.; Ma, P.; Chen, S.; Zhang, H.; Zhang, D.; Zhang, D.; Luan, X.; Mai, Y.; Liu, R.* Water Insensitive Synthesis of Poly- β -Peptides with Defined Architecture. *Angew. Chem. Int. Ed.* 2020, 59, 7240-7244.
11. Zhou, M.; Qian, Y.; Xie, J.; Zhang, W.; Jiang, W.; Xiao, X.; Chen, S.; Dai, C.; Cong, Z.; Ji, Z.; Shao, N.; Liu, L.; Wu, Y.; Liu, R.* Poly(2 - Oxazoline) Based Functional Mimics of Peptides to Eradicate MRSA Infections and Persisters While Alleviating Antimicrobial Resistance. *Angew. Chem. Int. Ed.* 2020, 59, 6412-6419. **(VIP paper, Inside Cover, Highly Cited Paper)**
12. Chen, Q.; Yu, S.; Zhang, D.; Zhang, W.; Zhang, H.; Zou, J.; Mao, Z.; Yuan, Y.; Gao C.; Liu, R.* Impact of Antifouling PEG Layer on the Performance of Functional Peptides in Regulating Cell Behaviors. *J. Am. Chem. Soc.* 2019, 141, 16772
13. Wu, Y.; Zhang, D.; Ma, P.; Zhou, R.; Hua, L.; Liu, R.* Lithium hexamethyldisilazide initiated superfast ring opening polymerization of α -amino acid N-carboxyanhydrides. *Nat. Commun.* 2018, 9 (1), 5297.
14. Ding, X.; Duan, S.; Ding, X.; Liu, R.*; Xu, F.* Versatile Antibacterial Materials: An Emerging Arsenal for Combatting Bacterial Pathogens. *Adv. Funct. Mater.* 2018, 28 (40), 19. **(Highly Cited Paper)**