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## 微生物致孔改性纤维素新型水凝胶的制备和应用研究

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**摘要:** 本研究利用微生物新陈代谢产生的气体替代传统化学发泡剂为致孔剂，并结合改性纤维素和 PVA 构建具备多孔互传网络结构的可生物降解型水凝胶。研究了微生物致孔的不同构造水凝胶对有机染料的吸附特性及影响因素；探究了其吸附过程中化学吸附、物理吸附和生物吸附的吸附机理；同时，研究了废弃高分子水凝胶的完全生物降解作用。最终得到了微生物致孔既能吸附降解有机污染物

又能降解废弃的高分子吸附材料的双降解功能性水凝胶。

**关键词：**微生物致孔、互穿网络、水凝胶、吸附、双降解

## **Preparation and Application of Novel Microgels for Microporous Pore-Modified Cellulose Hydrogel**

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**Abstract:** In the work report here, the biodegradable hydrogel with porous structure and interpenetrating networks were successfully prepared by using the gas produced by microorganism's metabolism instead of the traditional chemical foaming agent as porogen, and the modified cellulose and PVA being used as raw materials. The adsorption characteristics and influencing factors of [microorganism](#)-induced hydrogels with different structures were studied on organic pollutants. Then, the mentioned adsorption mechanism of chemisorption, physical adsorption and biosorption in the adsorption process was investigated. In addition, the complete biodegrade of the [microorganism](#) on the abandoned polymer hydrogel was explored. Furthermore, the double-degradation functional hydrogel, which can both adsorb and degrade organic pollutants and degrade the discarded polymeric adsorbents, was prepared by microorganism foaming.

**Key words:** Microorganism foaming, Interpenetrating network, Hydrogel, Adsorption, Double- degradation function