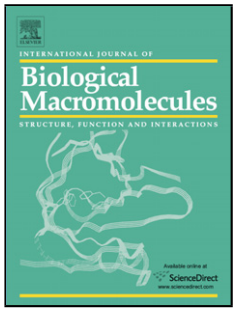


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# The preparation and study of regenerated cellulose fibers by cellulose carbamate pathway

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## Highlights

- • CC method is a low-cost chemical reagents and a simple wet-spinning process that yields essentially nontoxic byproducts cellulose technology.
- • Regenerated cellulose (RC) fibers were successfully spun from cellulose carbamate in a NaOH aqueous solution by wet spinning on a conventional viscose filament device and most of the traditional devices for conventional viscose production can be used.
- • The RC fibers exhibited cellulose II characteristics and displayed a circular cross section with a homogeneous structure.
- • RC fibers demonstrated excellent dye properties with different reactive dyes compared with viscose rayon and Yingli Lyocell.

**Abstract:** In this work, using cotton pulps and urea as raw materials, cellulose carbamates (CCs) were successfully prepared by liquid-solid phase in the high-boiling aprotic and polar solvent (DMAc). Regenerated cellulose (RC) fibers were successfully spun from cellulose carbamate in a NaOH aqueous solution by wet spinning on a conventional viscose filament device. And the structures and properties of products were characterized by Fourier transform infrared spectroscopy (FTIR), X-ray diffractometry (XRD), Thermal gravimetric analysis (TG) and Scanning electron microscopy (SEM), rheology measurement and dye testing. The results showed that the CC can be quickly dissolved in 9%NaOH solution. RC fibers exhibited a bright surface and an approximately circular cross section. There was no lobulate shape and contained obvious pores and voids in the internal sections. RC fibers demonstrated a typical cellulose II crystal structure and a good thermal stability. And tensile strength

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