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1 **Combined effects of raw materials and solvent systems on the**
2 **preparation and properties of regenerated cellulose fibers**

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6 **ABSTRACT**

7 To investigate the combined effects of materials and solvents on the preparation, structural
8 and mechanical properties of regenerated cellulose fibers, four cellulosic materials
9 (microcrystalline cellulose, cotton linter pulp, bamboo pulp and bleached softwood sulfite
10 dissolving pulp) and six non-derivative solvents (NaOH/urea aqueous solution,
11 N,N-dimethylacetamide/lithium chloride, N-methyl-morpholine-N-oxide,
12 1-butyl-3-methylimidazolium Chloride, 1-allyl-3-methylimidazolium chloride and
13 1-ethyl-3-methylimidazolium acetate) were used to prepare fibers with wet spinning
14 method. The results showed that the dissolvability of solvent was the determining factor in
15 cellulose dissolution, and the dissolving time was influenced by the raw materials'
16 properties, such as molecular weight, exposed area and hemicellulose content. The
17 crystallinity and elongation at break of the fibers were almost fixed and not affected by the
18 materials and solvents. However, the tensile strength of the fibers was directly
19 proportional to the molecular weight of the raw materials, and varied with the type of
20 solvents through cellulose degradation.

21 *Keywords:* raw material; cellulose solvents; combined effect; regenerated fiber.

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