

Cellulose nanoparticles have attracted the tremendous attention from the material science and engineering communities due to their benefits such as biodegradability, biocompatibility, and excellent physical performance. Conventionally cellulose nanoparticles are prepared via “top-down”, which gives several demerits of non-uniformities in size and shape. In addition, the particles need extra treatments to prevent aggregation. When the size became smaller than 100 nm, even severe treatment in chemical or physical tools cannot isolate and disperse the particles stably in a media.

In this study, we described an innovative method to prepare cellulose nanoparticles with extremely decreased size and improved dispersion using one pot preparation from cellulose/ionic liquid solution. Auto-dispersing nanospheres with diameters of 20 nm were successfully fabricated via molar mass control and self-assembly of cellulose molecules in ionic liquids. We believe that our work could provide unique and meaningful points for the preparation of cellulose nanoparticles, and help in the process of establishing high performance cellulosic material.

