

Research on Synthesis and Properties of Cell-AA/ C₁₆DMAAC/MMT Super-absorbent Nanocomposite

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Abstract: A novel super-absorbent nanocomposite with wheat straw fiber which was alkali cooking pretreated, acrylate sodium, n-cetyl dimethyl allyl ammonium chloride(C₁₆DMAAC) and montmorillonite(MMT) was synthesized by in situ solution polymerization in aqueous solution. Compared with cellulose matrix, the water absorbing capacity, salt tolerance and the gel compression strength of nanocomposite have improved greatly, and with better anti-bacterial properties and environmental compatibility. The factors affecting the water-absorbent capacity, such as reaction temperature, monomers ratio, content of initiator and crosslinking agent, and neutralization degree of AA etc, were investigated and discussed in detail. In the same time, the investigation indicates that the formation of intercalated nanocomposite was promoted by the addition of C₁₆DMAAC owing to the strong interaction between C₁₆DMAAC and the platelets of MMT. This material can be used as special finishes to produce functional leather products for special occasions.

Key words: Wheat Straw; Acrylic acid; C₁₆DMAAC; Super-absorbent nanocomposite