



## SYNTHESIS OF CELLULOSE ESTERS IN IONIC LIQUIDS – MORE THAN A LABORATORY PROCEDURE?

Werner Mormann,\* Markus Wezstein

*Universität Siegen, FB 8 Laboratorium für Makromolekulare Chemie, Adolf-Reichwein-Straße 2, 57076 Siegen, Germany;*

*email: mormann@chemie.uni-siegen.de*

Ionic liquids (IL), particularly 1,3-dialkylimidazolium halides, carboxylates and others, can dissolve cellulose. They are not sensitive to oxidation and do not require additional inorganic salts or other components to impart stability to the solvent and solubility to cellulose.

Esterification of cellulose with organic acid anhydrides, with carboxylic acid chlorides and with diketenes has been studied. A parameter of paramount importance for the solubility behaviour of the resulting esters is the solubility of cellulose and the final product in the reaction mixture. Homogeneous reaction conditions are required for a random distribution of ester groups along the cellulose backbone.

The presentation describes the synthesis of cellulose esters with different chain length of the acid moiety. Acetylation with the anhydride is a homogeneous reaction, while the acid chloride is scarcely soluble in the Ionic Liquids. Direct acetylation to a degree of substitution of 2.5 as used for commercial cellulose acetate gives acetone soluble material ready for fibre spinning.

The influence of reaction conditions on the stability of cellulose (degradation) and regeneration (purification) of Ionic Liquids will be discussed and the process will be compared to state of the art manufacture of cellulose esters.

in order to impart solubility (processability) to the cellulose esters.