

## Effect of Enzymatic Modification on the Crystallinity of Cellulose Pulps

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**Abstract :** The cellulose is one of the most abundant polymers in the world, however, its application in the high-end value products such as films or fibres, it triggered by the cellulose properties. The noticeable presence of hydrogen bonding reflected with partially crystalline structure makes the cellulose insoluble in common solvents and not meltable. The existing technologies, such as viscose process, suffer from environmental and economical problems, because of the risk of harmful chemicals liberation during the spinning process. The enzymatic modification of cellulose with endoglucanase makes it directly alkali soluble in NaOH solution, giving the opportunities for film and fibers formation. As the effect of enzymatic treatment, there are observed changes in crystalline structure and accompanying changes of the affinity of cellulose to water, demonstrated by water retention value. The objective of the project ELMO - Novel carbohydrate modifying enzymes for fibre modification is is to develop new enzyme products for modification of dissolving grade pulps. The aim is to increase the reactivity of dissolving grade pulps and remove residual hemicellulose. The scientific aim of this paper is to present the effect of enzymatic treatment on the crystallinity and affinity to water of cellulose pulps modified with enzymes.

**Keywords :** cellulose, crystallinity, WAXS, enzyme

**Conference Title :** ICSRD 2020 : International Conference on Scientific Research and Development

**Conference Location :** Chicago, United States

**Conference Dates :** December 12-13, 2020