

Recent advances in surface characterization of cellulose

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Abstract

The present lecture is focused on the recent advances on surface characterisation of cellulose and it will be divided into three parts:

1. The first part will be devoted to the basic concepts associated with the surface of solids and liquids and the theory behind physico-chemical parameters characteristic to their surface. In this context, the origin of the surface energy, the contaminations, the adhesions, will be discussed, etc [1, 2].
2. The second part will give the most known surface treatments and their effect on the resulting materials. This will include (i) physical (mostly mechanical) (ii) physico- chemical (such as Corona, plasma, UV...); and (iii) chemical treatments like grafting by direct condensation, "grafting from" and "grafting onto" approaches. In this context, recent works investigating green solvent-based or solvent-less systems will be reported [1, 2].
3. The last part will be devoted to the techniques of characterisation and will point out the difficulties associated with such an approach.

Finally, some relevant concluding remarks and perspectives will be given.

REFERENCES

- [1] Rol F., M. N. Belgacem M. N., Gandini A., Bras J. Recent advances in surface-modified cellulose nanofibrils. *Progress in Polymer Science*, 88 (2019) 241–264
- [2] A. Gandini, Belgacem M. N. The surface and in-depth modification of cellulose fibers. *Advances in Polymer Science*, 271 (2016)169-206.