Modification of cellulose nanofibre surfaces by He/NH3 plasma at atmospheric pressure

Cellulose nanofibre coatings were treated by a dielectric barrier discharge plasma in a He/NH3 gas mixture at atmospheric pressure. Ultrasound was optionally irradiated during the treatment. The treatment enhanced the wetting of deionized water, glycerol, and uncured epoxy. Irradiation of ultrasound did not significantly change optical emission from the plasma, but increased the oxygen contents and enhanced etching and roughening at the nanofibre coating surfaces. Furthermore, the irradiation of ultrasound enhanced the wetting of deionized water and glycerol drastically, while that of uncured epoxy to some extent.

General information
- Publication status: Published
- Organisations: Composite Materials, Department of Wind Energy, Luleå University of Technology
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- Number of pages: 10
- Pages: 7185-7194
- Publication date: 2019
- Peer-reviewed: Yes

Publication information
- Journal: Cellulose
- Volume: 26
- Issue number: 12
- ISSN (Print): 0969-0239
- Ratings:
- BFI (2019): BFI-level 1
- Web of Science (2019): Indexed yes
- Original language: English
- Keywords: Cellulose, Nanofibre, Plasma treatment, Dielectric barrier discharge, Ultrasound, Wetting, Surface roughening
- DOIs: 10.1007/s10570-019-02594-8

Research output: Contribution to journal › Journal article – Annual report year: 2019 › Research › peer-review