

## Supplementary Materials

# Relationship between surface properties and fiber network parameters of eucalyptus kraft pulps and their absorption capacity

Catarina A. Azevedo<sup>1</sup>, Sofia M.C. Rebola<sup>2</sup>, Eddy M. Domingues<sup>1,§</sup>, Filipe M.L. Figueiredo<sup>1</sup>, Dmitry V. Evtuguin<sup>1\*</sup>

<sup>1</sup> CICECO, Department of Chemistry, University of Aveiro, Campus Universitario de Santiago, 3810-193 Aveiro, Portugal; [catarinaazevedo@ua.pt](mailto:catarinaazevedo@ua.pt) (C.A.A.); [eddy@ua.pt](mailto:eddy@ua.pt) (E.D.); [lebre@ua.pt](mailto:lebre@ua.pt) (F.M.F.)

<sup>2</sup> Celulose Beira Industrial (CELBI) S. A., Leirosa, 3081-853 Figueira da Foz, Portugal; [sofia.rebola@altri.pt](mailto:sofia.rebola@altri.pt) (S.R.)

<sup>§</sup> Present address: TEMA, Department of Mechanical Engineering, University of Aveiro, Campus Universitario de Santiago, 3810-193 Aveiro, Portugal

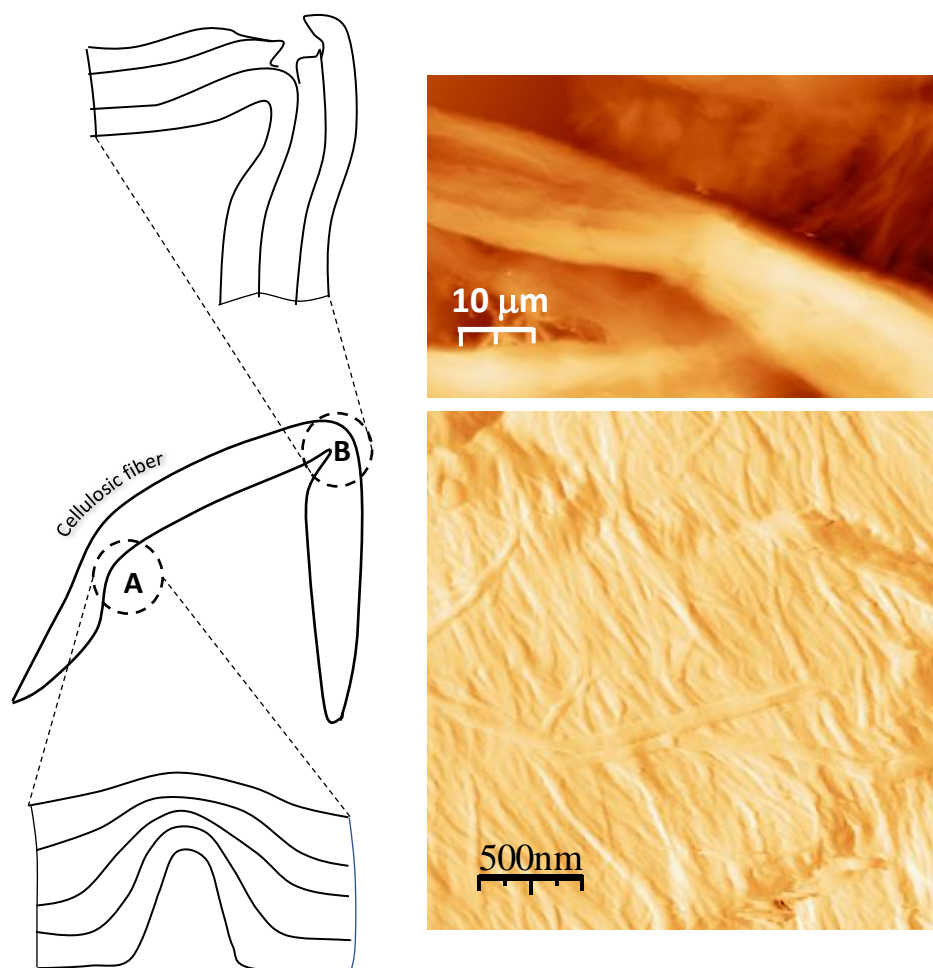


Fig. S1. Schematic representation of a cellulose fiber possessing curl (A) and kink (B) defects. Misalignment of the fibril lamellae lead to wavy layers, where some adjacent surfaces in the creases approach each other, forming intrafiber cross-links with inaccessible surface (expanded A region). Some fibril lamellae in kink defects are even broken (expanded B region) accompanied by molecular-level bond breakages. These features are envisaged by Atomic Force Microscopy (AFM) images acquired in a tapping mode\*.

\*Atomic force microscopy (AFM) imaging was performed using a multimode microscope (Nanoscope IIIA, Veeco) in a tapping mode. A silicon tip-cantilever system PPP-NCH (Nanosensors™), with a resonance frequency of 330 kHz and a spring constant of 42 N/m was used for the surface scanning.