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# Luminescent carbon dots obtained from cellulose

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## Abstract

In this work we have prepared carbon dots (CD) from bleached eucalyptus kraft pulp through a simple method using sulfuric and nitric acid. The obtained CD were fully characterized by several techniques including FTIR, Elemental Analysis, XRD, Raman, HRTEM, UV-Vis, Fluorescence and Potentiometric titration. The diameter of the quasi-spherical biomass-derived CD ranged from 1 to 3 nm, with an average size of 2 nm and a great amount of different oxygen groups (mainly carboxylic acids) were detected on the surface. This considerable amount of carboxylic acid was used to successfully passivate the nanoparticles with oligomeric PEG1500N molecules to enhance the quantum yield of the CD. Considering that the CD were obtained by a low cost method and that the renewable precursor is highly abundant, this method can represent an important strategy to reduce the final cost for the production of carbon nanoparticles with potential applications in different areas such as biomedical and photocatalysis.

*Keywords:* carbon dots, cellulose, fluorescence

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