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(54) **USE OF NANOCRYSTALINE CELLULOSE AND POLYMER GRAFTED NANOCRYSTALINE CELLULOSE FOR INCREASING RETENTION IN PAPERMAKING PROCESS**

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See application file for complete search history.

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(57) **ABSTRACT**

The invention provides methods and compositions for improving the characteristics of paper substrates. The method involves adding to a paper substrate an NCC-polymer. NCC-polymers have unique chemical properties which result in improvements in wet strength, dry strength and drainage retention properties of the paper substrates.

8 Claims, 1 Drawing Sheet