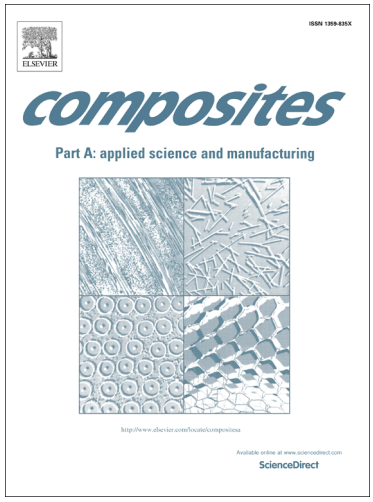

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PII: S1359-835X(17)30094-5
DOI: http://dx.doi.org/10.1016/j.compositesa.2017.02.028
Reference: JCOMA 4589

To appear in: *Composites: Part A*

Received Date: 15 November 2016
Revised Date: 20 February 2017
Accepted Date: 26 February 2017

Please cite this article as: Pucci, M.F., Liotier, P-J., Seveno, D., Fuentes, C., Vuure, A.V., Drapier, S., Wetting and swelling property modifications of elementary flax fibres and their effects on the Liquid Composite Moulding process, *Composites: Part A* (2017), doi: http://dx.doi.org/10.1016/j.compositesa.2017.02.028

Wetting and swelling property modifications of elementary flax fibres and their effects on the Liquid Composite Moulding process

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Abstract

Flax fibres were thermally treated, to prove that in the same manufacturing conditions, modifying wetting and swelling properties of fibres changes the flow during LCM processes and thus could enhance the final material health of composite parts. Swelling of untreated and treated fibres was measured with optical and tensiometric methods proving that the thermal treatment increases the dimensional stability of flax fibres. A methodology to minimise the dispersion of contact angle values was also developed, and surface energy components of untreated and treated fibres were then determined in the frame of the Owens and Wendt theory. It was evidenced that the thermal treatment makes fibres less hydrophilic. Composite half plates reinforced with untreated and treated flax fabrics were then simultaneously manufactured

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