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SUPPLEMENTARY MATERIAL

A step towards tuning the jute fiber structure and properties by employing sodium periodate oxidation and coating with alginate

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Table S1 Statistical results of the determination of aldehyde (CHO) and carboxyl (COOH) group contents by using a *t*-test (for CHO $df = n_1 + n_2 - 2 = 4$, $n_1 = n_2 = 3$, for COOH $df = n_1 + n_2 - 2 = 8$, $n_1 = n_2 = 5$)

Fabrics	CHO	COOH
J, J0.2/30	41.36 ***	2.24
J, J0.2/60	13.89 ***	0.15
J, J0.2/90	12.26 ***	0.80
J, J0.2/120	68.26 ***	0.53
J0.2/30, J0.2/60	4.89 **	1.38
J0.2/30, J0.2/90	6.19 **	3.00 *
J0.2/30, J0.2/120	48.58 ***	3.46 **
J0.2/60, J0.2/90	2.43	0.36
J0.2/60, J0.2/120	10.00 ***	0.18
J0.2/90, J0.2/120	3.96 *	0.70
J, J0.4/30	20.82 ***	1.14
J, J0.4/60	82.92 ***	1.11
J, J0.4/90	23.29 ***	1.50
J, J0.4/120	58.17 ***	0.80
J0.4/30, J0.4/60	11.40 ***	0.23
J0.4/30, J0.4/90	11.36 ***	0.26
J0.4/30, J0.4/120	23.46 ***	0.85
J0.4/60, J0.4/90	6.71 **	0.00
J0.4/60, J0.4/120	21.09 ***	0.77
J0.4/90, J0.4/120	2.52	1.30

Legend: (*) - 0.05 level of significance, (**) - 0.01 level of significance, (***) - 0.001 level of significance, *df* - degrees of freedom, n_1 , and n_2 are sample sizes

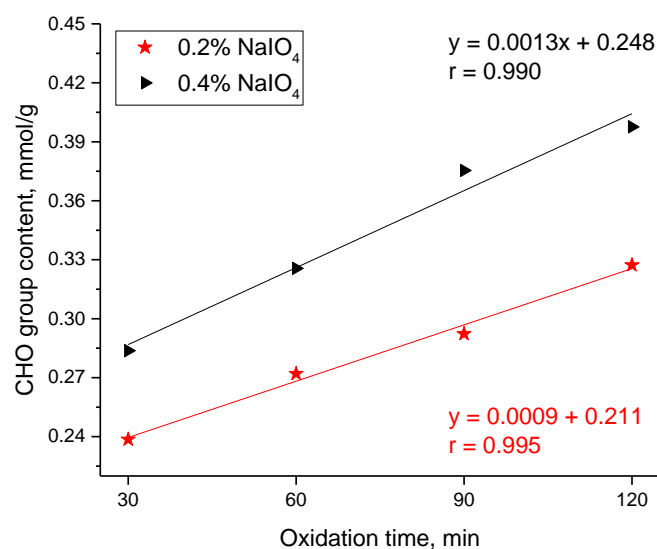


Fig. S1 Linear correlation between the oxidation time and CHO group content in jute fabrics

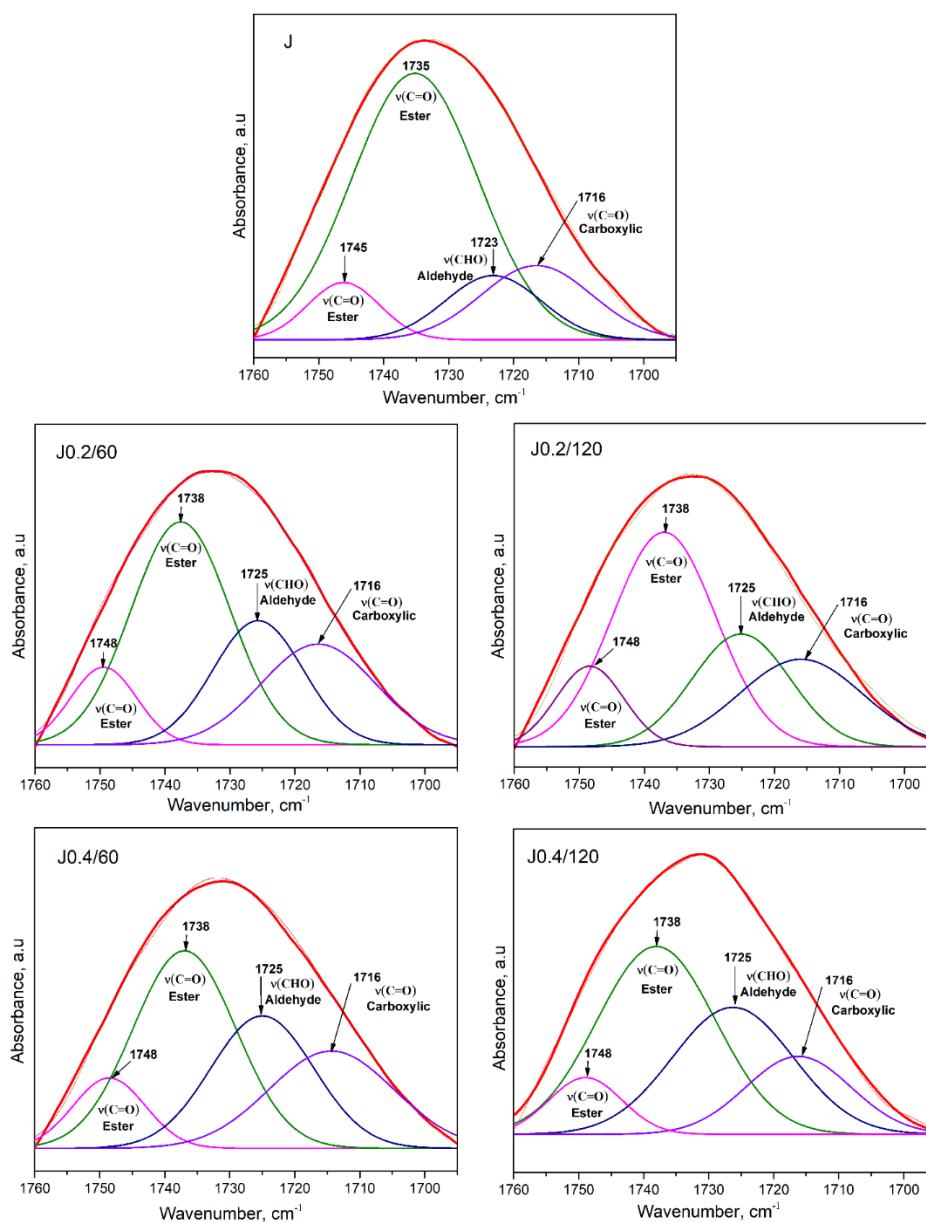


Fig. S2 Deconvolution of the FTIR spectra in the region 1695–1760 cm⁻¹, associated with the ester, aldehyde, and carboxyl groups in both raw and periodate-oxidized jute fabrics

Table S2 Area percentage of the deconvoluted FTIR spectra corresponding to the ester (COOR), aldehyde (CHO) and carboxyl (COOH) groups in raw and periodate-oxidized jute fabrics

Fabrics	COOR	CHO	COOH
	%	%	%
J	72.46	10.13	17.40
J0.2/60	55.78	18.11	26.11
J0.2/120	49.41	25.61	24.97
J0.4/60	50.78	22.57	26.65
J0.4/120	42.51	32.28	25.81

Table S3 Statistical results of the determination of fabric maximum force and stiffness by using a *t*-test ($df = n_1 + n_2 - 2 = 4$, $n_1 = n_2 = 3$)

Fabrics	Maximum force	Stiffness
J, J0.2/60	2.17	7.90 **
J, J0.2/120	6.81 **	12.41 ***
J0.2/60, J0.2/120	4.84 **	5.62 **
J, J0.4/60	12.30 ***	13.35 ***
J, J0.4/120	14.68 ***	15.27 ***
J0.4/60, J0.4/120	6.76 **	7.30 **
J0.2/60, J0.4/60	11.37 ***	7.09 **
J0.2/120, J0.4/120	15.59 ***	8.29 **

Legend: (*) - 0.05 level of significance, (**) - 0.01 level of significance, (***) - 0.001 level of significance, *df* - degrees of freedom, n_1 , and n_2 are sample sizes

Table S4 Statistical results of the determination of fabric moisture sorption and wetting time by using a *t*-test ($df = n_1 + n_2 - 2 = 4$, $n_1 = n_2 = 3$)

Fabrics	Moisture sorption	Wetting time
J, J0.2/60	5.35 **	92.80 ***
J, J0.2/120	3.08 *	84.64 ***
J0.2/60, J0.2/120	0.08	50.59 ***
J, J0.4/60	7.38 **	-
J, J0.4/120	3.34 *	-
J0.4/60, J0.4/120	0.57	-
J0.2/60, J0.4/60	1.25	-
J0.2/120, J0.4/120	0.27	-

Legend: (*) - 0.05 level of significance, (**) - 0.01 level of significance, (***) - 0.001 level of significance, *df* - degrees of freedom, n_1 , and n_2 are sample sizes.

Table S5 Statistical results of the determination of alginate-coated fabric moisture sorption and wetting time by using a *t*-test ($df = n_1 + n_2 - 2 = 4$, $n_1 = n_2 = 3$)

Fabrics	Moisture sorption	Wetting time
J, J+ AL	4.09 *	49.55 ***
J0.2/60, J0.2/60 + AL	2.08	485.99 ***
J0.2/120, J0.2/120 + AL	1.93	112.92 ***
J0.4/60, J0.4/60 + AL	6.02 **	-
J0.4/120, J0.4/120 + AL	3.60 *	-
J + AL, J0.2/60 + AL	3.14 *	11.17 ***
J +AL, J0.2/120 + AL	4.18 *	12.90 ***
J0.2/60 + AL, J0.2/120 + AL	1.13	0.50
J + AL, J0.4/60 + AL	7.89 **	12.55 ***
J + AL, J0.4/120 + AL	6.19 **	11.81 ***
J0.4/60 + AL, J0.4/120 + AL	0.66	0.60
J0.2/60 + AL, J0.4/60 + AL	6.21 **	1.11
J0.2/120 + AL, J0.4/120 + AL	3.86 *	1.34

Legend: (*) - 0.05 level of significance, (**) - 0.01 level of significance, (***) - 0.001 level of significance, *df* - degrees of freedom, n_1 , and n_2 are sample sizes