

## Supporting information:

# Valorization of Invasive Plants from Macaronesia as Filler Materials in the Production of Natural Fiber Composites by Rotational Molding

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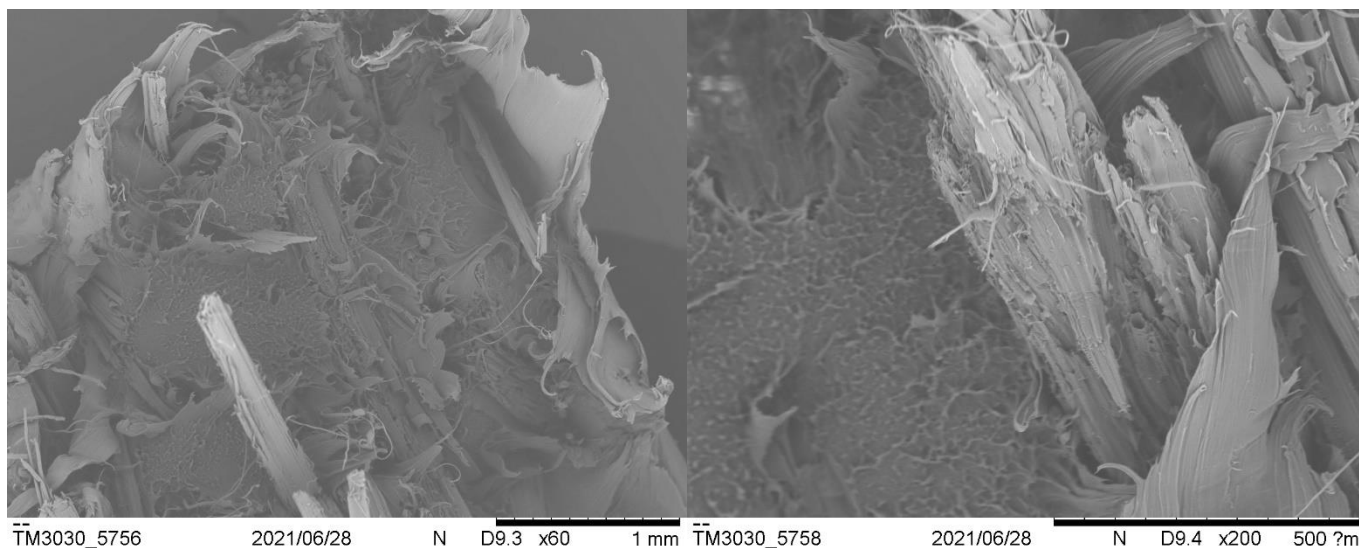
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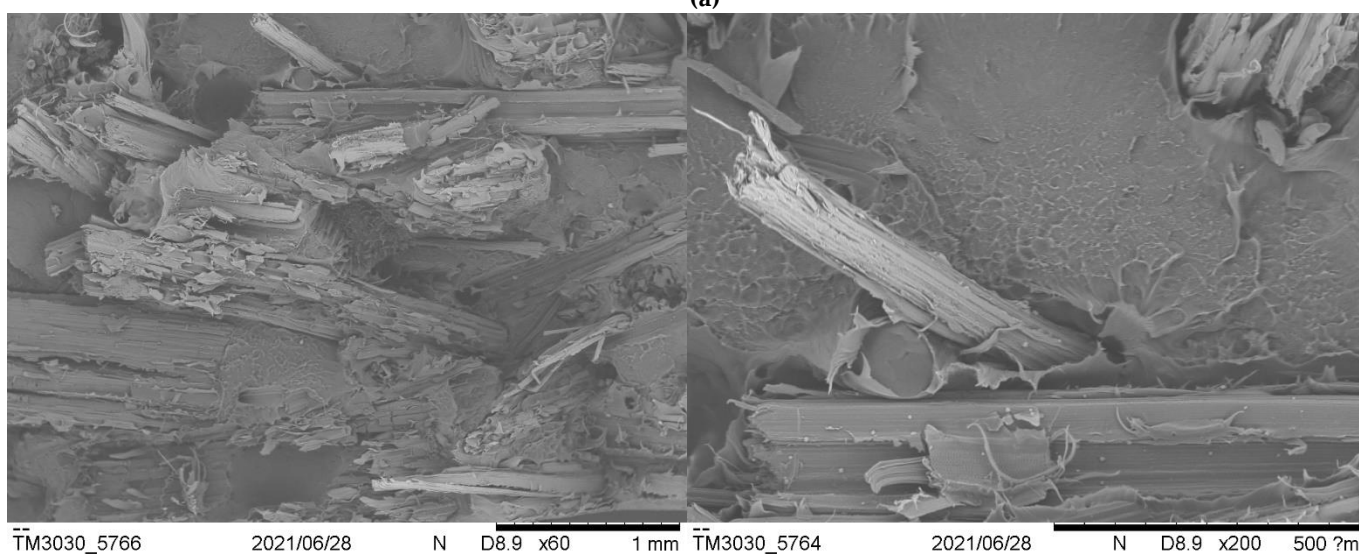
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**Table S1.** Mechanical properties of rotomolded composites (PE matrix and 20 % fiber). A, B, C, D refers to different fiber sizes distribution: A (> 250 µm), B (125 – 250 µm), C (75 – 125 µm) and D (< 75 µm).

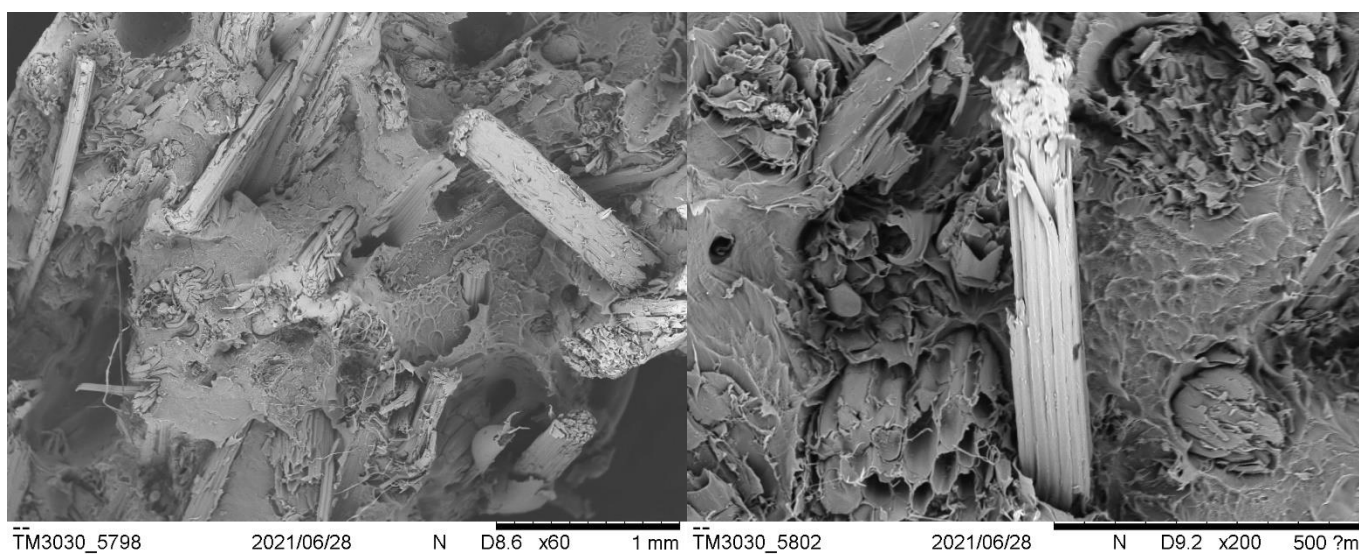
COMPOSITE	DENSITY (g/cm <sup>3</sup> )	IMPACT Strength (kJ/m <sup>2</sup> )	TENSILE (MPa)			FLEXURAL (MPa)		
			Ultimate strength	E	Yield strength	Ultimate strength	E <sub>f</sub>	Yield strength
R.PE.	0,901	17,6 ± 1,1	16,1 ± 0,1	395,4 ± 71,2	7,2 ± 1,3	18,7 ± 2,1	661,2 ± 120,7	9,0 ± 1,7
R.PE.AD.20.A	0,720	8,5 ± 1,67	12,2 ± 0,16	382,7 ± 46,08	3,7 ± 0,72	12,4 ± 1,14	637,1 ± 72,05	6,2 ± 0,95
R.PE.AD.20.B	0,654	4,6 ± 0,69	7,9 ± 0,82	314,9 ± 30,09	5,0 ± 0,69	10,9 ± 1,08	515,1 ± 44,52	6,3 ± 0,75
R.PE.AD.20.C	0,562	2,6 ± 0,88	4,7 ± 0,80	217,5 ± 36,25	2,1 ± 0,75	6,3 ± 3,24	336,1 ± 143,15	3,1 ± 1,22
R.PE.AD.20.D	0,589	1,7 ± 0,64	3,9 ± 2,03	179,0 ± 89,12	1,6 ± 0,74	5,2 ± 4,14	219,8 ± 166,18	2,8 ± 2,26
R.PE.ADt.20.A	0,785	9,5 ± 1,39	12,9 ± 0,37	430,4 ± 21,56	5,3 ± 1,64	14,3 ± 1,41	721,8 ± 78,66	6,9 ± 0,98
R.PE.ADt.20.B	0,731	7,0 ± 1,44	9,9 ± 0,74	392,4 ± 6,29	5,7 ± 0,64	13,2 ± 1,14	677,8 ± 127,12	7,6 ± 0,09
R.PE.ADt.20.C	0,569	2,7 ± 0,61	5,1 ± 1,16	229,7 ± 46,17	3,4 ± 0,72	6,9 ± 2,28	389,3 ± 103,67	3,9 ± 1,24
R.PE.ADt.20.D	0,613	2,5 ± 1,09	4,8 ± 1,92	224,8 ± 96,90	2,6 ± 1,07	5,9 ± 3,19	263,6 ± 143,59	3,2 ± 1,80
R.PE.PS.20.A	0,515	3,3 ± 0,57	5,5 ± 0,32	249,5 ± 31,85	1,7 ± 0,21	5,9 ± 0,68	268,1 ± 36,16	3,4 ± 0,64
R.PE.PS.20.B	0,527	2,5 ± 0,62	5,2 ± 0,46	224,1 ± 34,39	2,7 ± 0,91	5,0 ± 0,10	266,4 ± 13,29	2,8 ± 0,20
R.PE.PS.20.C	0,527	1,8 ± 0,36	3,8 ± 0,48	202,7 ± 36,86	1,5 ± 0,34	4,3 ± 1,84	214,2 ± 58,77	2,5 ± 1,06
R.PE.PS.20.D	0,496	1,2 ± 0,62	1,6 ± 1,35	81,2 ± 51,93	0,5 ± 0,33	1,8 ± 1,40	74,1 ± 64,55	1,1 ± 0,77
R.PE.PSt.20.A	0,755	8,1 ± 1,11	11,6 ± 0,41	389,4 ± 30,97	4,5 ± 1,31	13,2 ± 1,44	583,4 ± 42,37	6,7 ± 1,33
R.PE.PSt.20.B	0,775	8,4 ± 1,13	11,9 ± 0,58	424,6 ± 43,45	6,1 ± 1,03	14,4 ± 1,67	681,4 ± 95,69	7,3 ± 0,70
R.PE.PSt.20.C	0,707	5,3 ± 1,62	9,0 ± 0,75	344,1 ± 14,00	4,1 ± 0,92	11,9 ± 1,82	621,3 ± 103,76	5,9 ± 0,31
R.PE.PSt.20.D	0,633	3,8 ± 0,32	6,8 ± 0,57	264,1 ± 26,07	4,0 ± 1,26	8,5 ± 1,43	457,0 ± 16,70	4,3 ± 0,32
R.PE.RC.20.A	0,595	3,6 ± 1,19	7,6 ± 1,15	266,9 ± 25,29	1,6 ± 0,35	6,7 ± 3,88	226,0 ± 131,17	3,5 ± 2,38
R.PE.RC.20.B	0,524	1,9 ± 0,28	4,2 ± 0,54	210,6 ± 32,46	1,5 ± 0,28	4,5 ± 1,04	206,0 ± 52,22	2,2 ± 0,26
R.PE.RC.20.C	0,503	1,4 ± 0,48	2,6 ± 0,61	146,5 ± 55,23	1,1 ± 0,25	3,7 ± 1,95	169,9 ± 71,89	1,7 ± 0,71
R.PE.RC.20.D	0,514	1,3 ± 0,5	1,8 ± 1,48	105,3 ± 70,40	0,8 ± 0,48	2,0 ± 0,99	84,8 ± 47,22	0,9 ± 0,66
R.PE.RCt.20.A	0,729	6,6 ± 0,69	11,4 ± 0,33	373,8 ± 28,84	3,6 ± 1,31	12,6 ± 1,91	563,1 ± 105,99	6,0 ± 1,37
R.PE.RCt.20.B	0,526	2,3 ± 0,58	3,9 ± 0,48	192,5 ± 28,63	2,2 ± 0,61	5,3 ± 1,91	252,6 ± 72,35	2,3 ± 0,31
R.PE.RCt.20.C	0,408	0,9 ± 0,35	1,6 ± 0,81	65,5 ± 26,93	0,6 ± 0,18	1,6 ± 0,71	84,4 ± 49,88	1,0 ± 0,55
R.PE.RCt.20.D	0,462	1,1 ± 0,55	2,0 ± 1,46	96,2 ± 65,40	0,7 ± 0,40	2,6 ± 1,79	97,8 ± 64,60	1,3 ± 0,91



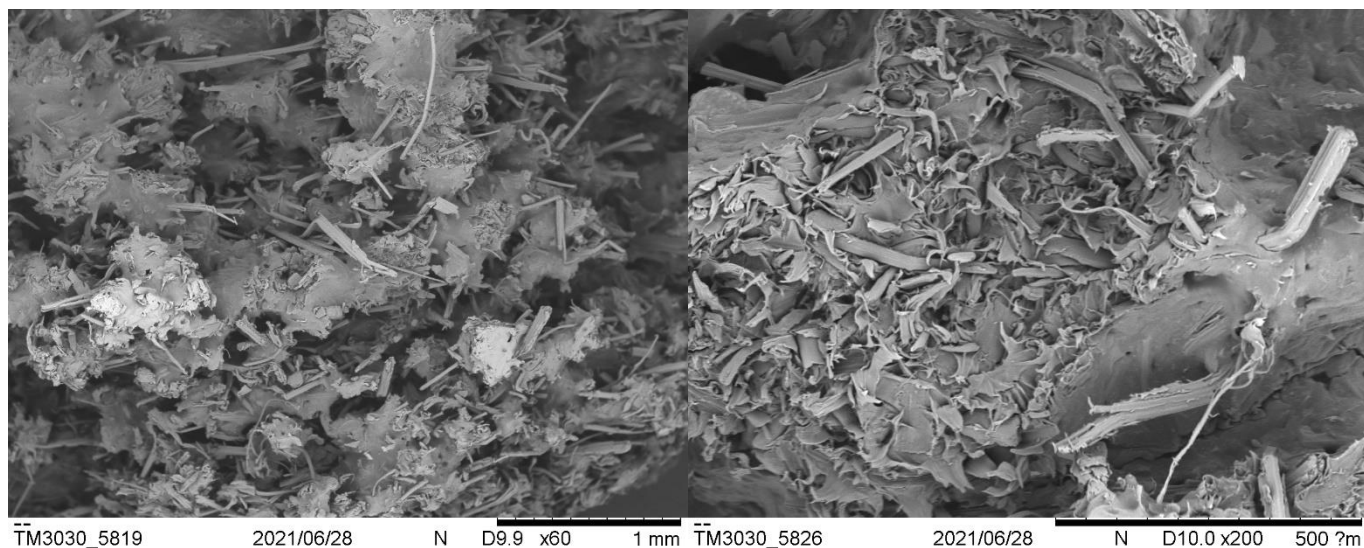
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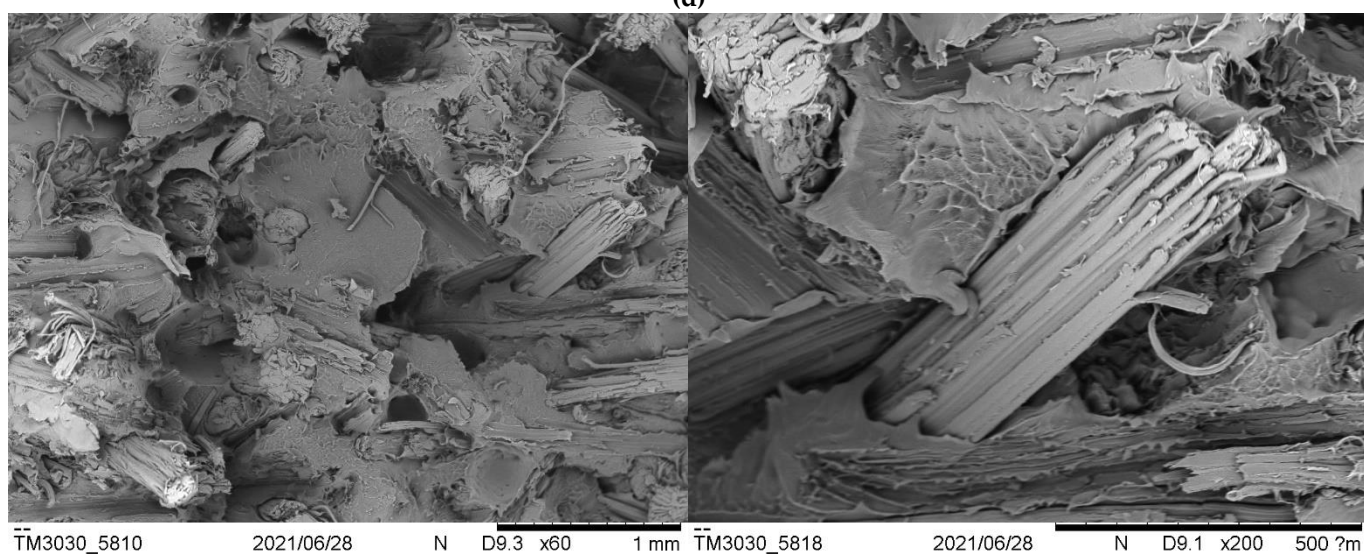
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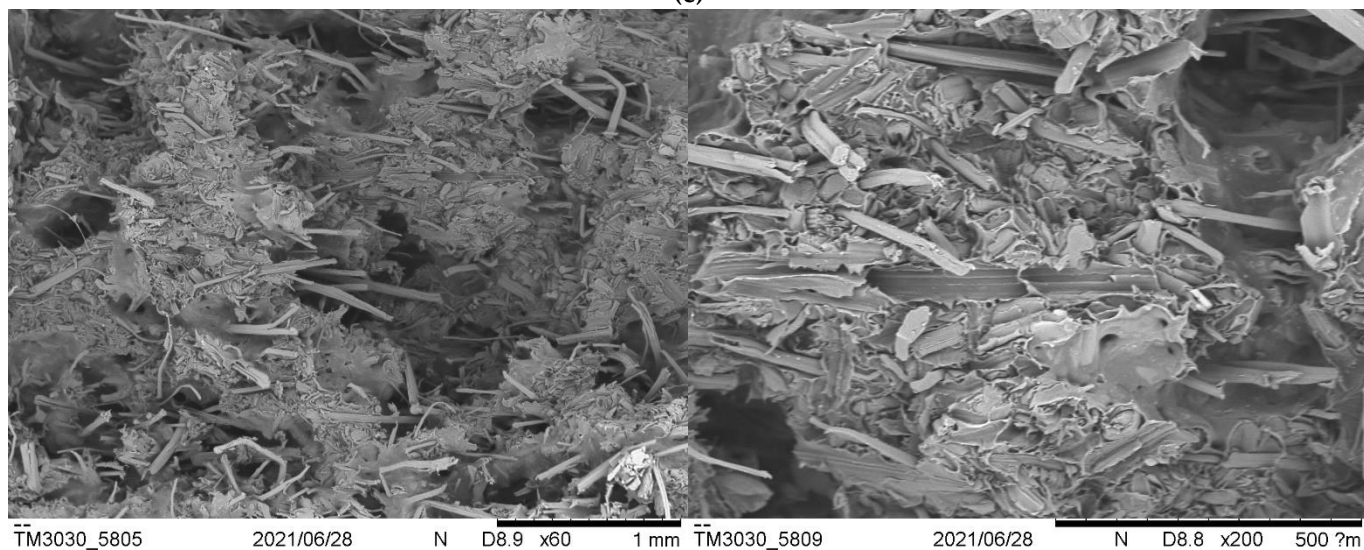
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(d)

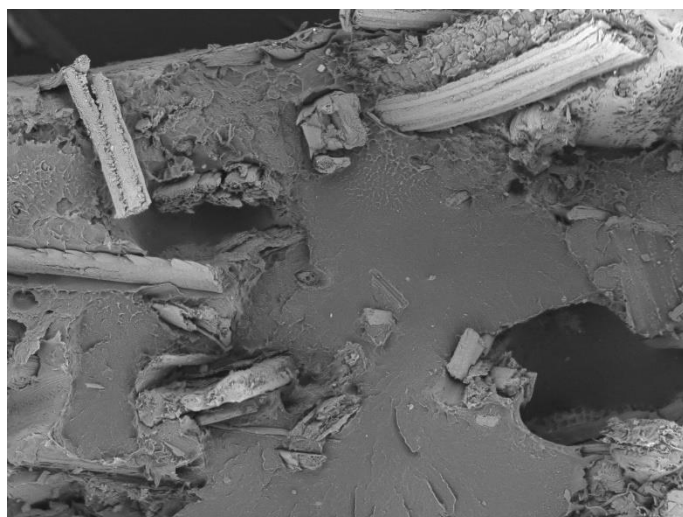


(e)



(f)

**Figure S1.** SEM pictures of *Arundo donax* rotomolded composites: (a) 10 % unsieved fiber, (b) 10% unsieved treated fiber, (c) 20% A-fiber ( $> 250 \mu\text{m}$ ), (d) 20% D-fiber ( $< 75 \mu\text{m}$ ), (e) 20% A-treated fiber ( $> 250 \mu\text{m}$ ), (f) 20% D-treated fiber ( $< 75 \mu\text{m}$ )

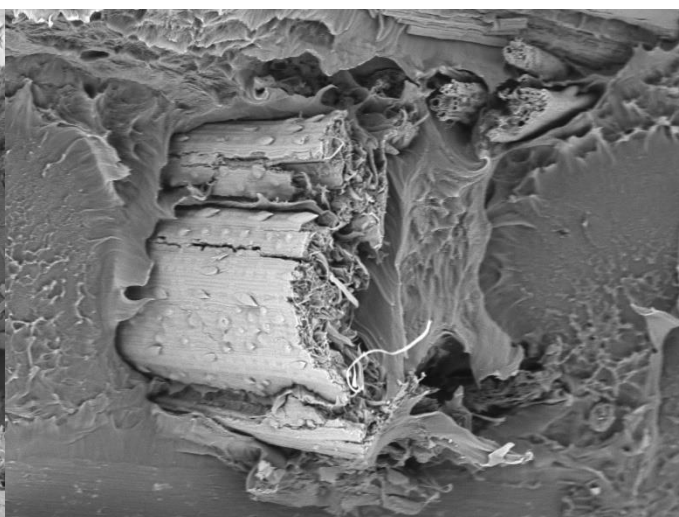


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2021/06/28

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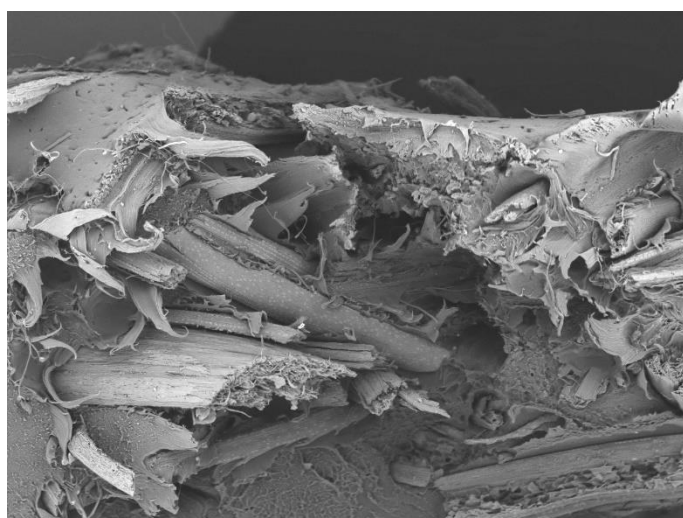
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(a)

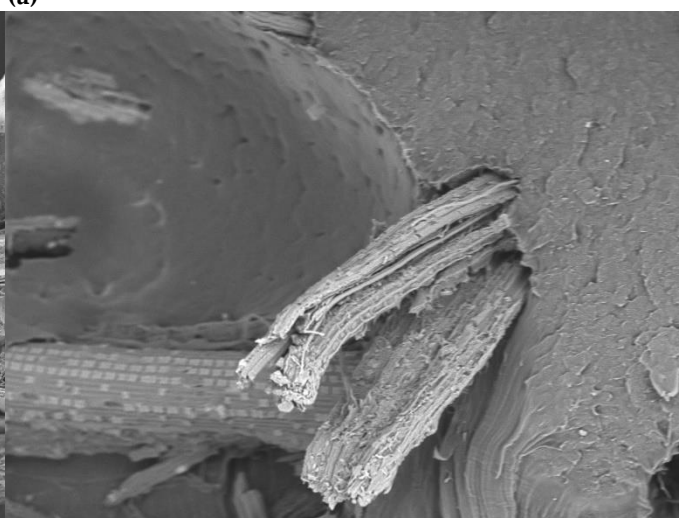


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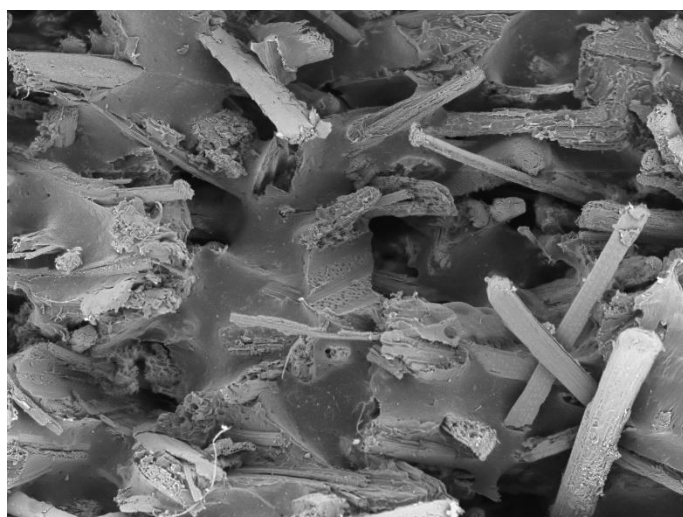
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(b)

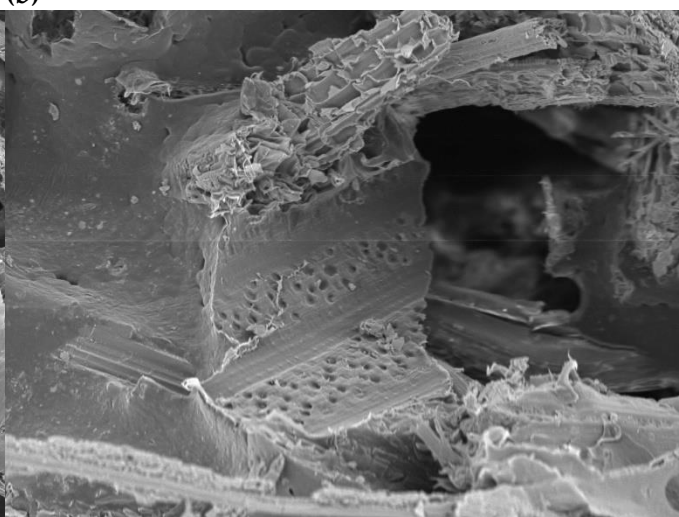


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2021/06/29

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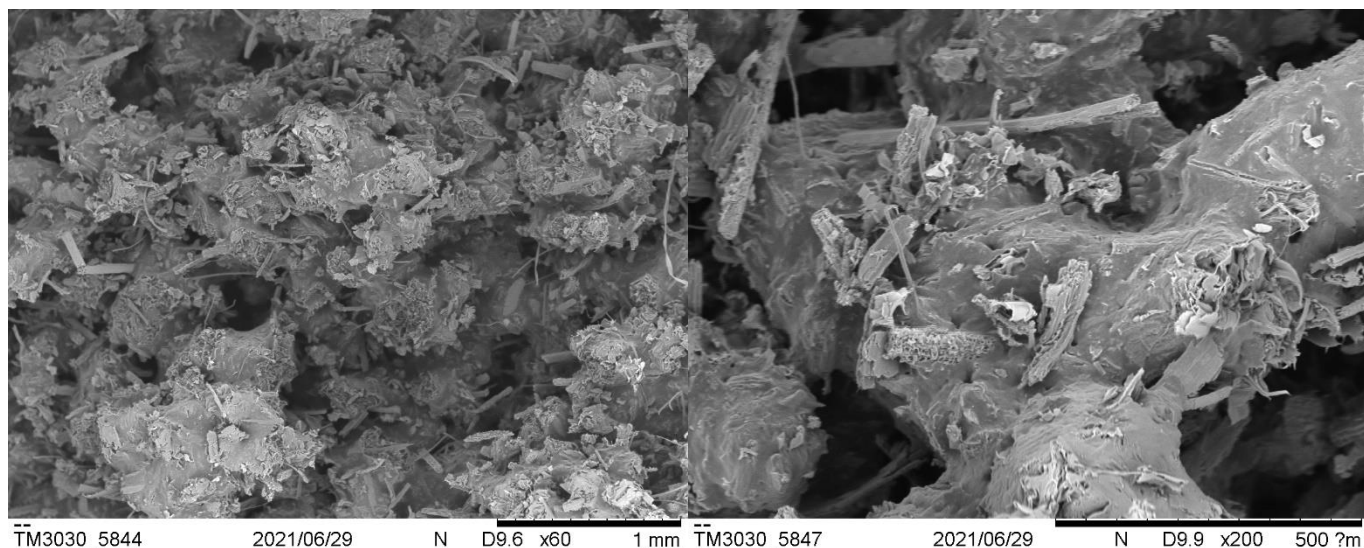
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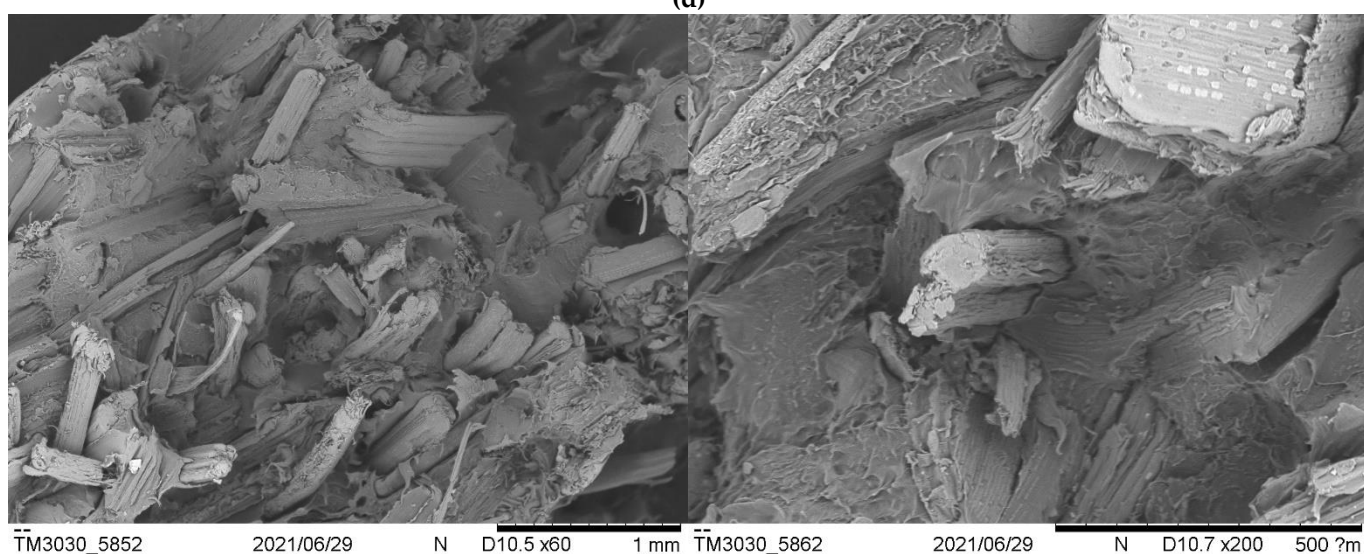
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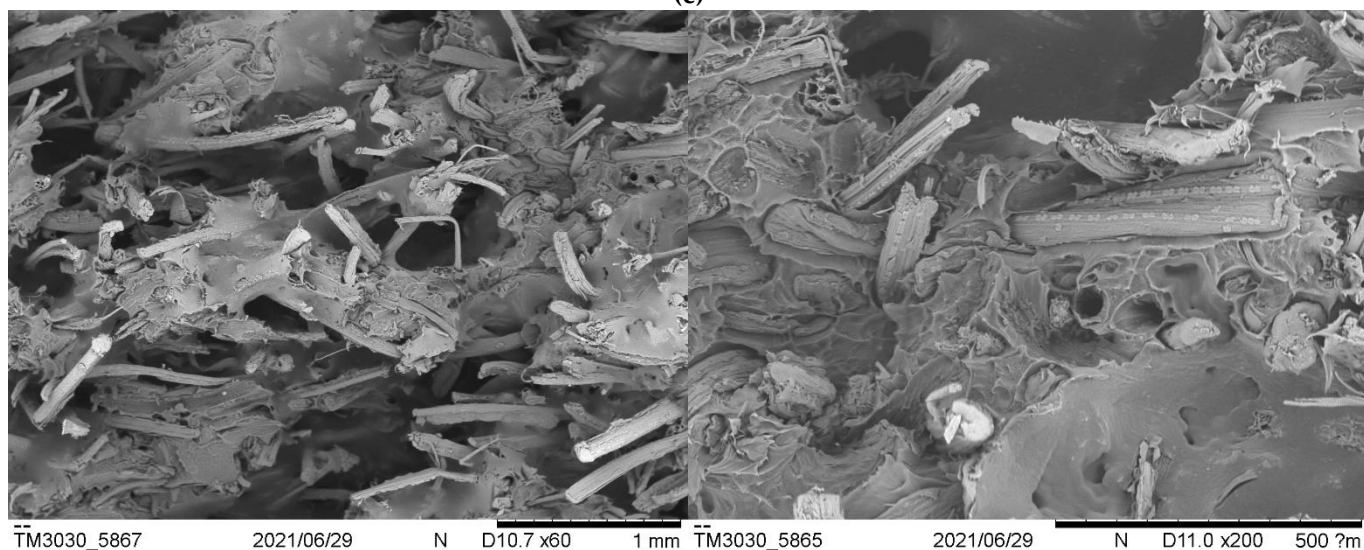




(d)

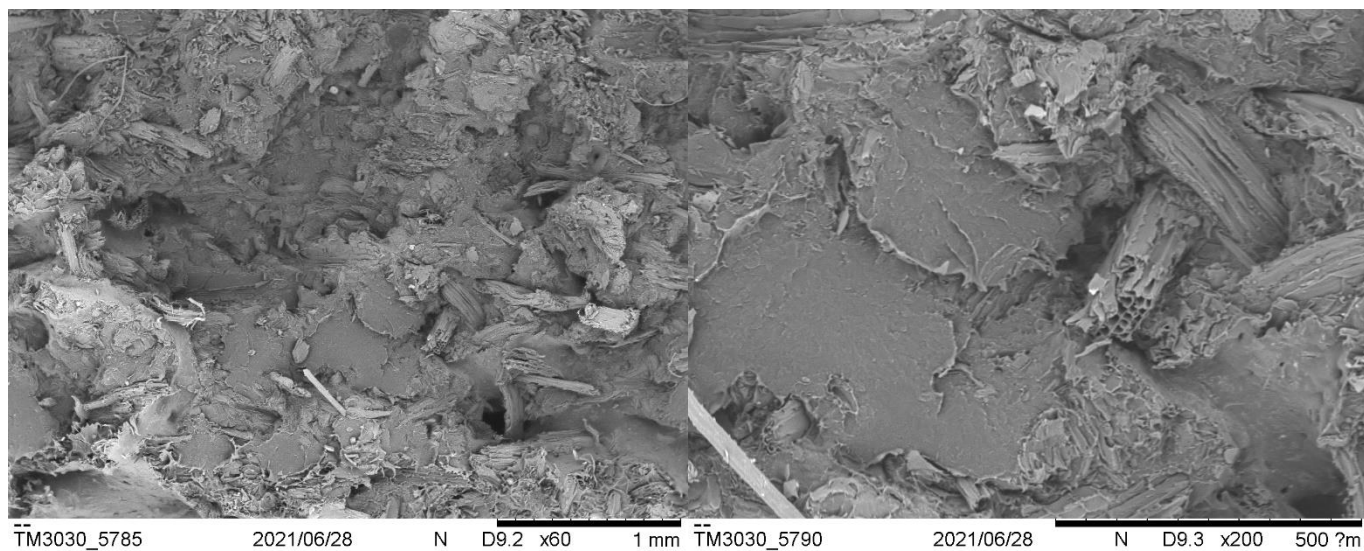


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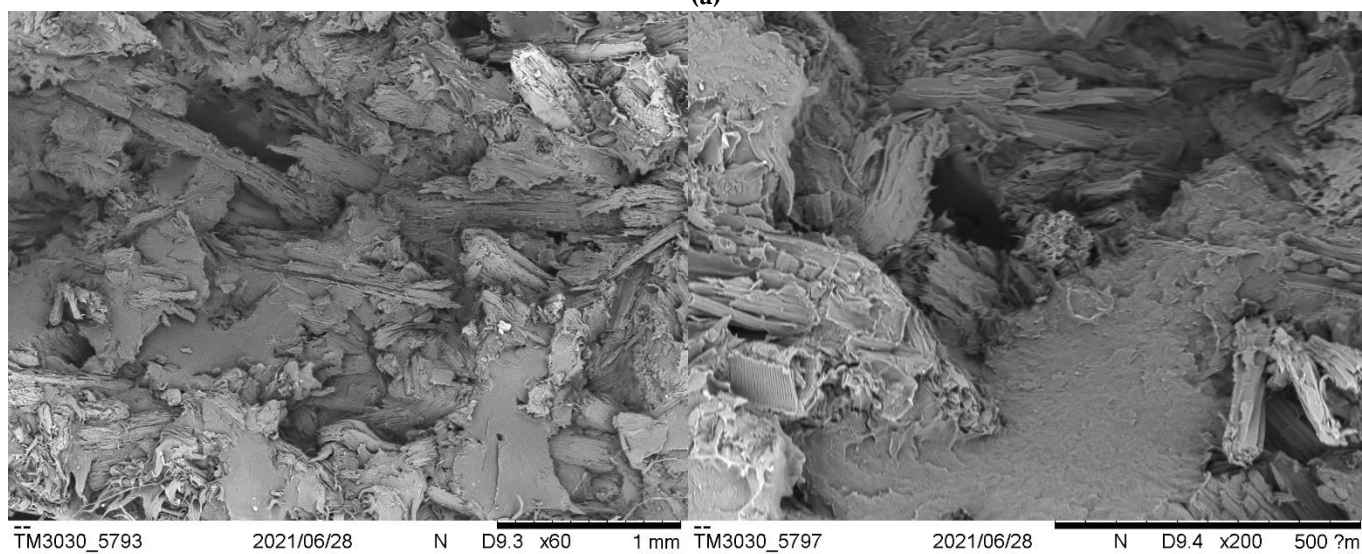


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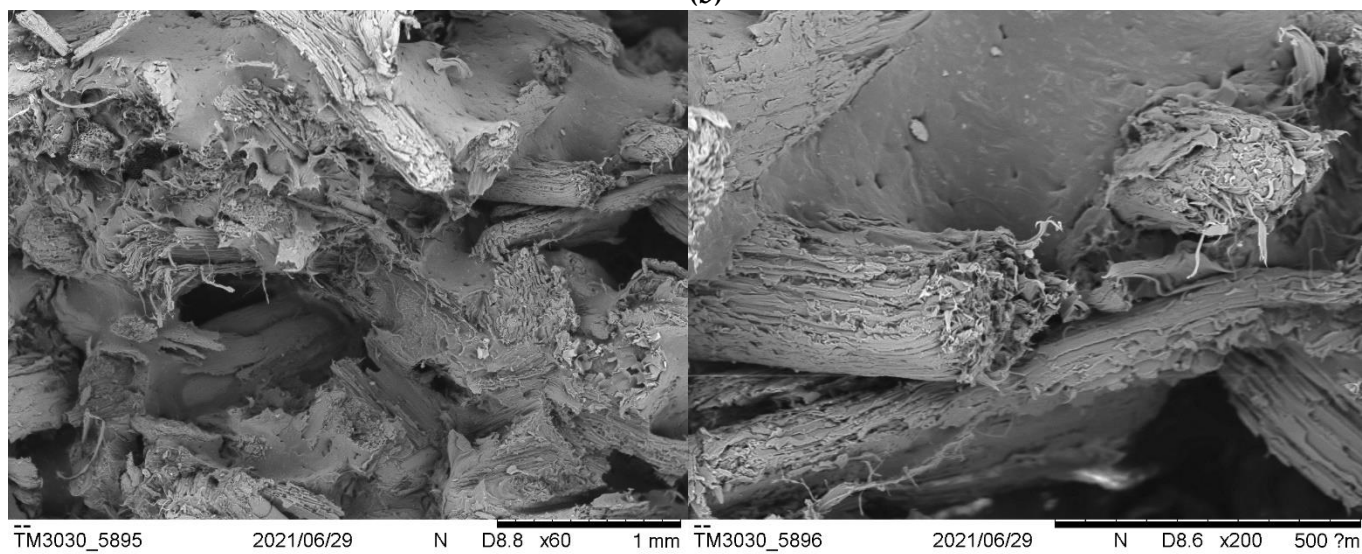
**Figure S2.** SEM pictures of *Pennisetum setaceum* rotomolded composites: (a) 10 % unsieved fiber, (b) 10% unsieved treated fiber, (c) 20% A-fiber ( $> 250 \mu\text{m}$ ), (d) 20% D-fiber ( $< 75 \mu\text{m}$ ), (e) 20% A-treated fiber ( $> 250 \mu\text{m}$ ), (f) 20% D-treated fiber ( $< 75 \mu\text{m}$ )



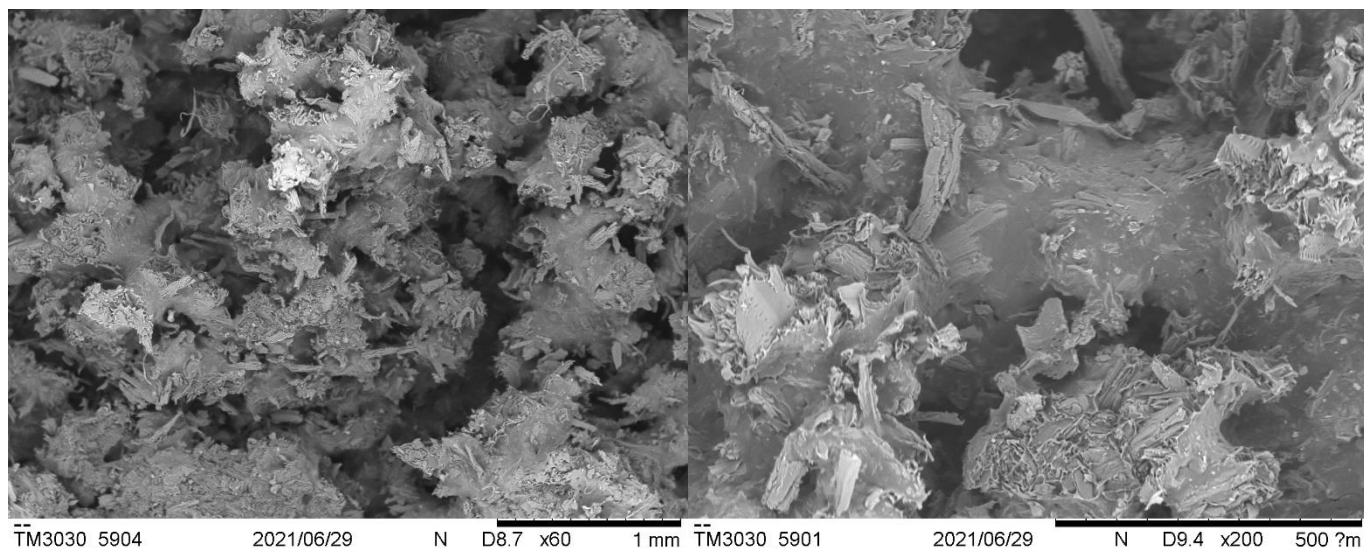
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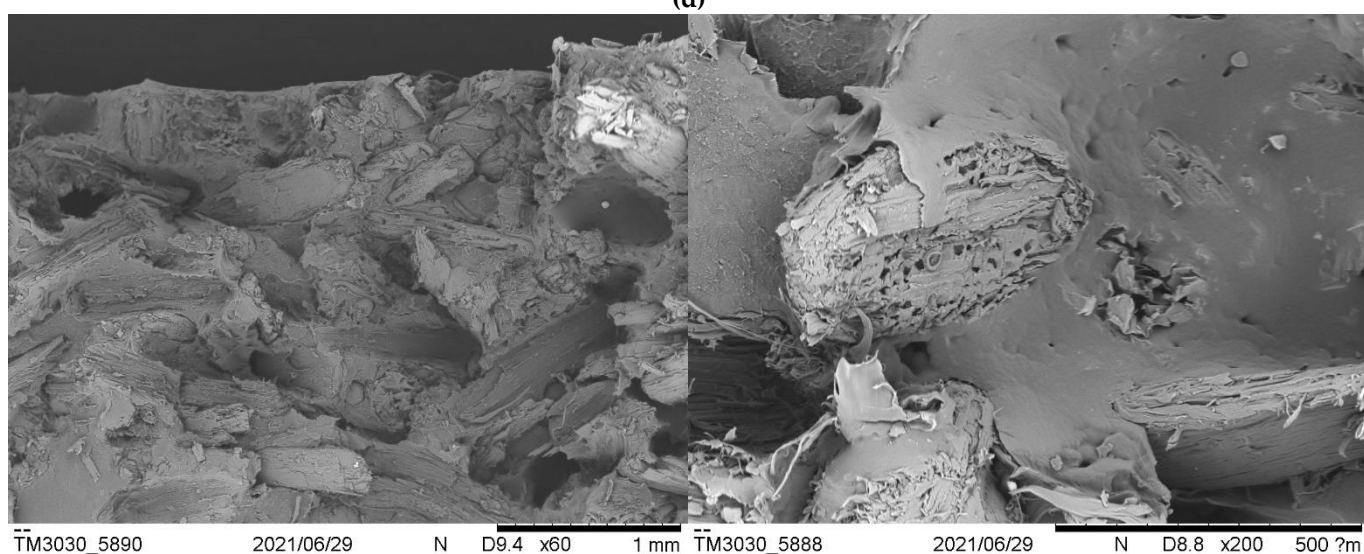
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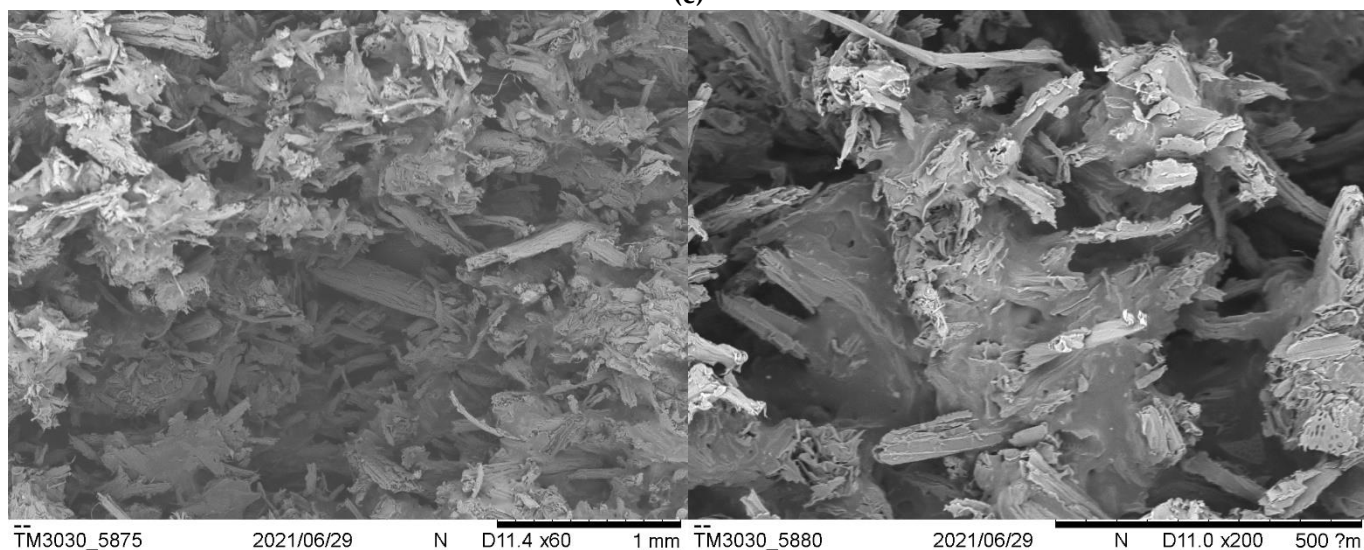
(c)



(d)



(e)



(f)

**Figure S3.** SEM pictures of *Ricinus communis* rotomolded composites: (a) 10 % unsieved fiber, (b) 10% unsieved treated fiber, (c) 20% A-fiber ( $> 250 \mu\text{m}$ ), (d) 20% D-fiber ( $< 75 \mu\text{m}$ ), (e) 20% A-treated fiber ( $> 250 \mu\text{m}$ ), (f) 20% D-treated fiber ( $< 75 \mu\text{m}$ )