

Supplementary Material

Table S1. Product weights and results of the IR analysis. Weights after the slash are repeat measurements with two and three items.

Item	Material	Code	Weight [g]	Information	IR analysis
Cotton bud sticks	Plastic	1a	0.08/0.15/0.23		PP
	Paper	1b	0.31/0.62/0.93		
Cutlery knives	Plastic	2a	1.84	PS	
	"	2b	2.17		PS
	"	2c	5.13		PP
	"	2d	4.37	PLA	
	Wood	2e	2.52	Birchwood	
Cutlery forks	Plastic	3a	2.2		PP
	"	3b	2.3		PS
	"	3c	4.37		"
	"	3d	5.78		PP
	"	3e	4.43	PLA	
	"	3f	4.31	"	
	Wood	3g	2.64	Birchwood	
	"	3h	2.33	"	
Cutlery spoons	Plastic	4a	2.17	PS	
	"	4b	3.59		PP
	"	4c	5.56	PLA	
	Wood	4d	2.33	Birchwood	
Cutlery teaspoons	Plastic	5a	0.95	PS	
	"	5b	0.91		PS
	"	5c	2.1	PLA	
	Wood	5d	1.24	Birchwood	
Straws	Plastic	6a	0.35		PP
	"	6b	0.5		"
	"	6c	1.16		Unknown
	"	6d	0.64		"
	Paper	6e	1.09		
	"	6f	1.14		
Stirrers	Plastic	7a	0.56/1.11/1.65		PS

	Wood	7b	0.57	Birchwood
	"	7c	0.64	"
	"	7d	0.91	"
	"	7e	0.63	"
	"	7f	0.83	"
	"	7g	1.12	"
Plates	Plastic	8a	8.4/17.52/25.85	PS
	Paper	8b	10.2	
	"	8c	10.79	
	"	8d	14.82	

Table S2. Detailed process information

Process	Information
Paper production	- 79% primary fibre and 21% recycled fibre - 0.009 kg of feed and 0.008 kg of tall oil per kg of paper not accounted for in the analysis
Injection moulding	- 1.85 kWh of electricity, 0.44 kg of water per kg of plastic - 2% material loss
Manufacturing of wooden items	- production line: wood plate cutting machine (9.75 kW), a punch cutting machine (1.5 kW), a drying and polishing machine (8.06 kW) and a thermoforming machine (9 kW, 4,000 to 6,000 pieces per hour) [1,2] - it was assumed that all four machines have the same capacity - stirrers and teaspoons: 6,000 pieces per hour - knives, forks and spoons: 4,000 pieces per hour - 14% of the wood becomes waste [3] and is incinerated for electricity and steam generation
Transport	- Transport on land: Euro 0-6 truck mix (17.3t payload capacity, EU-28 production mix diesel, GaBi ts 8.7)
Paper recycling	- small amounts of aluminium chloride, glue, retention agent, sodium hypochlorite and starch not accounted for in the analysis
Windrow composting	- small amount of metals was not accounted for in the analysis

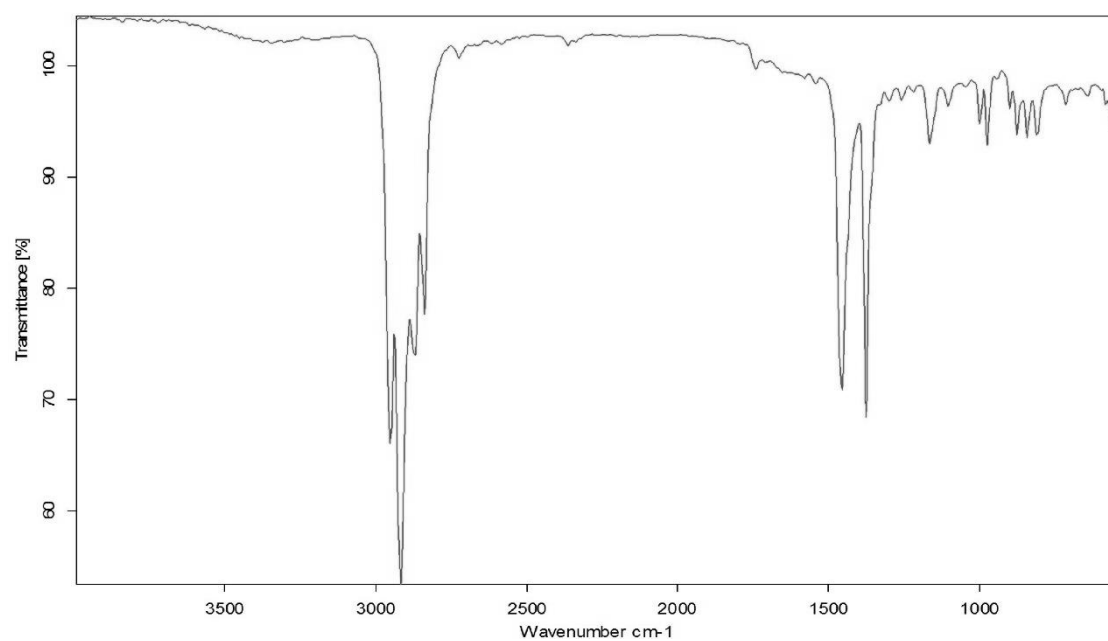


Figure S1. IR transmission spectrum of sample 1a

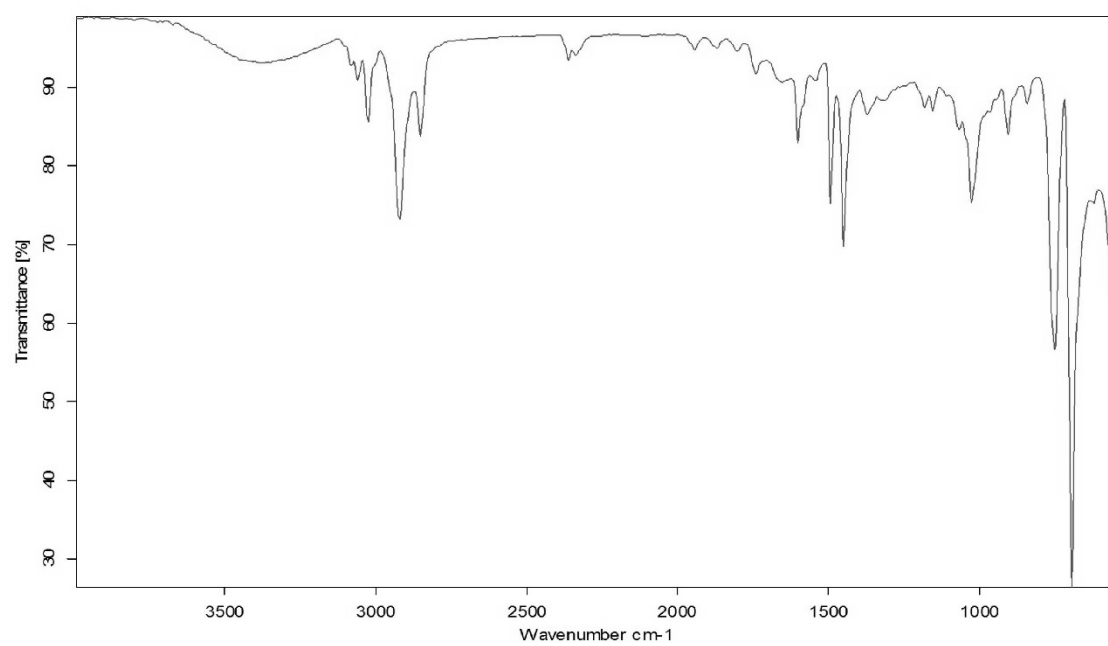


Figure S2. IR transmission spectrum of sample 2b

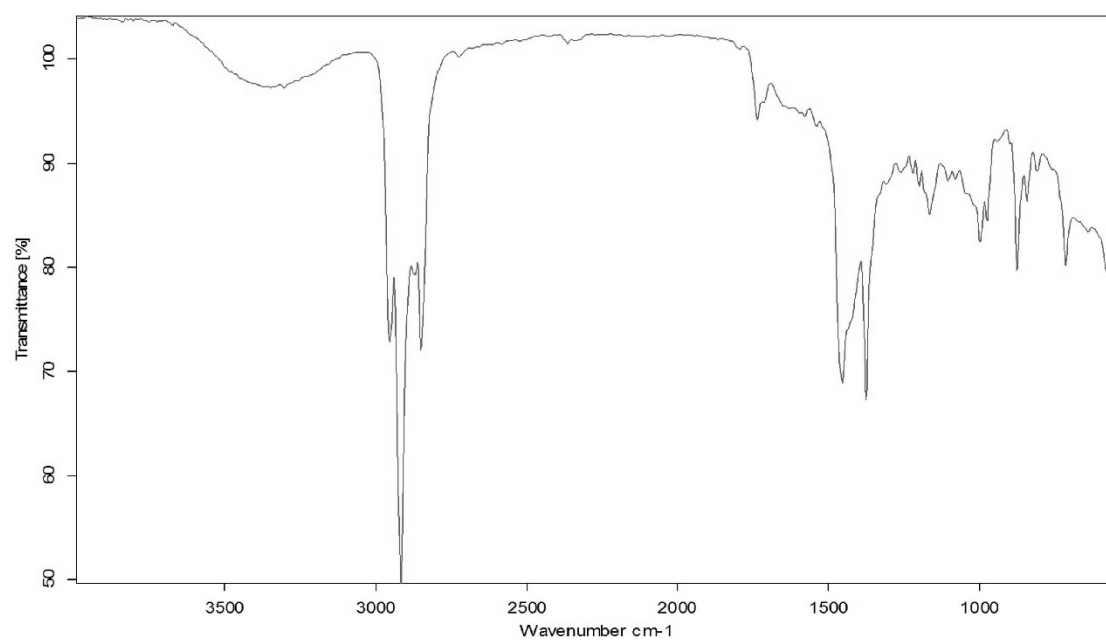


Figure S3. IR transmission spectrum of sample 2c

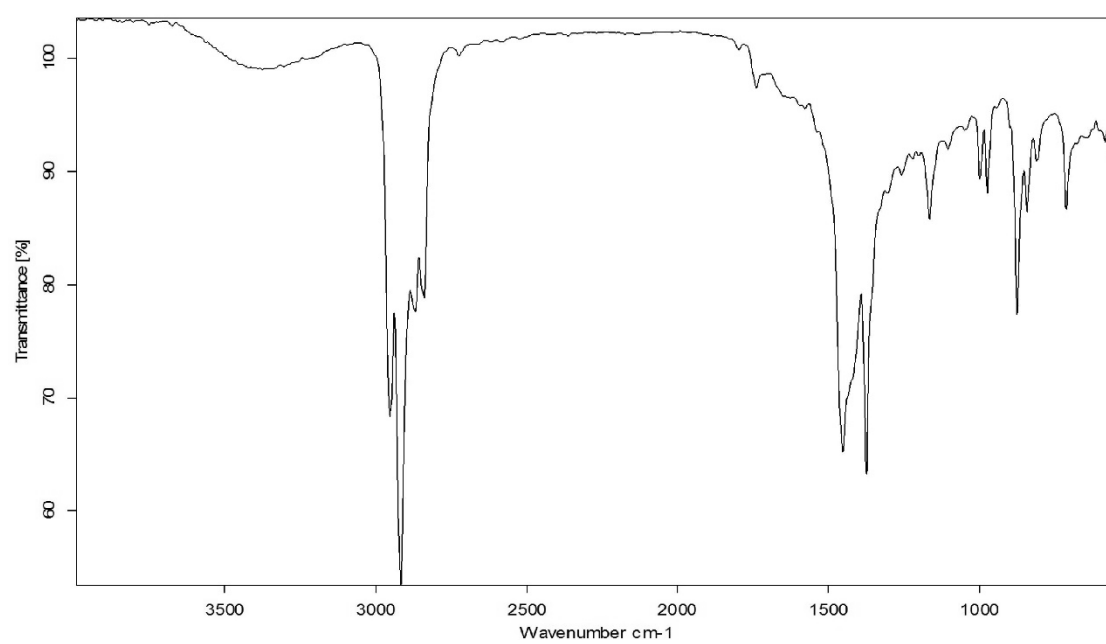


Figure S4. IR transmission spectrum of sample 3a

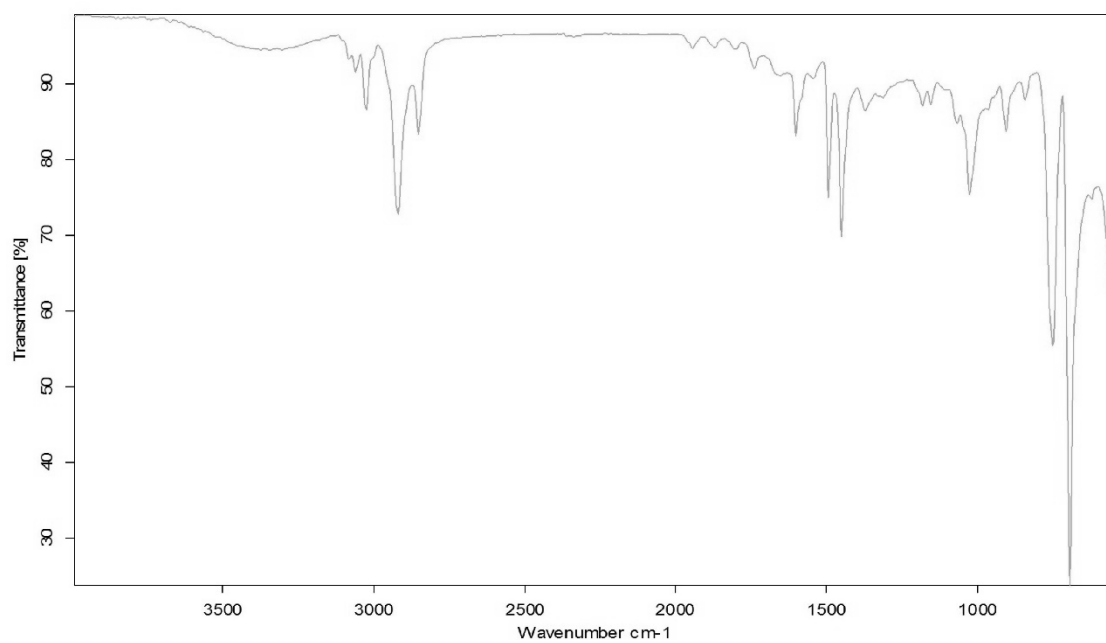


Figure S5. IR transmission spectrum of sample 3b

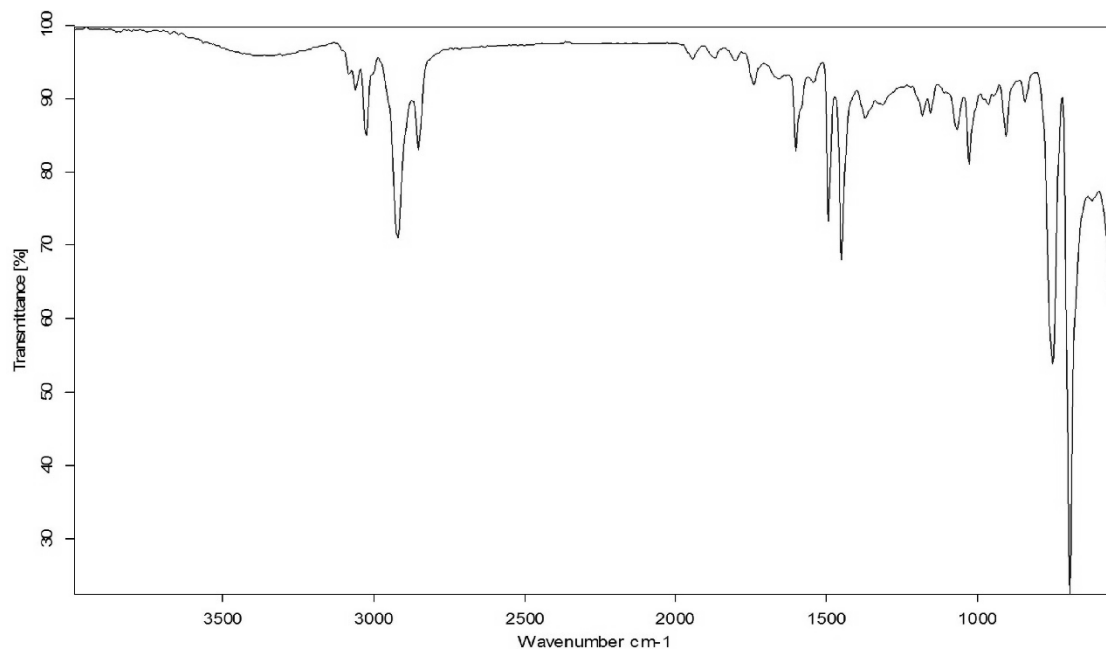


Figure S6. IR transmission spectrum of sample 3c

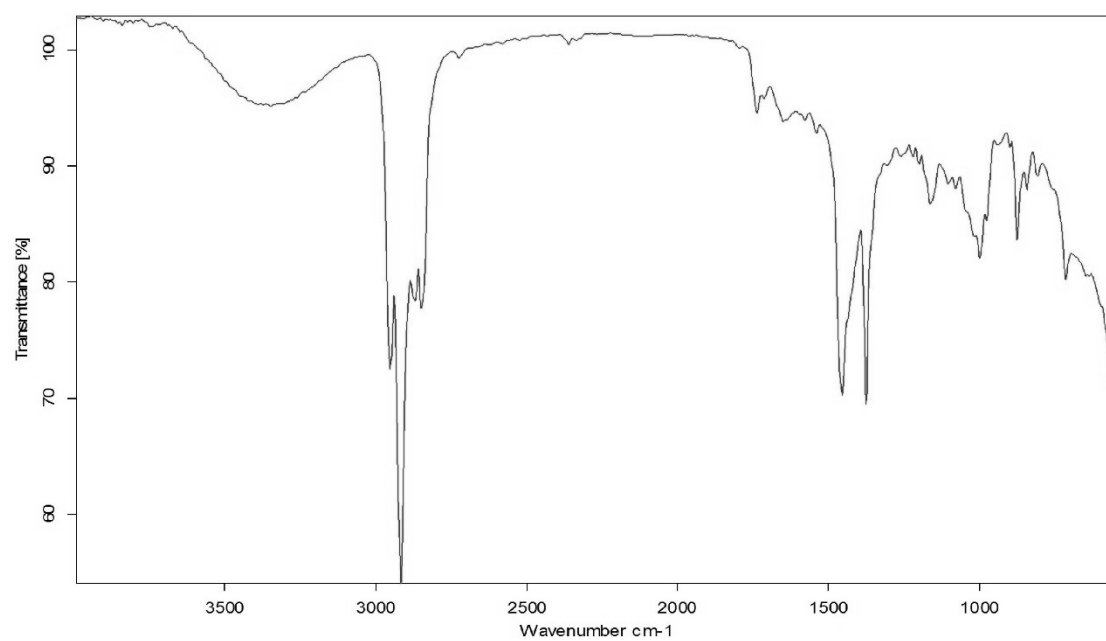


Figure S7. IR transmission spectrum of sample 3d

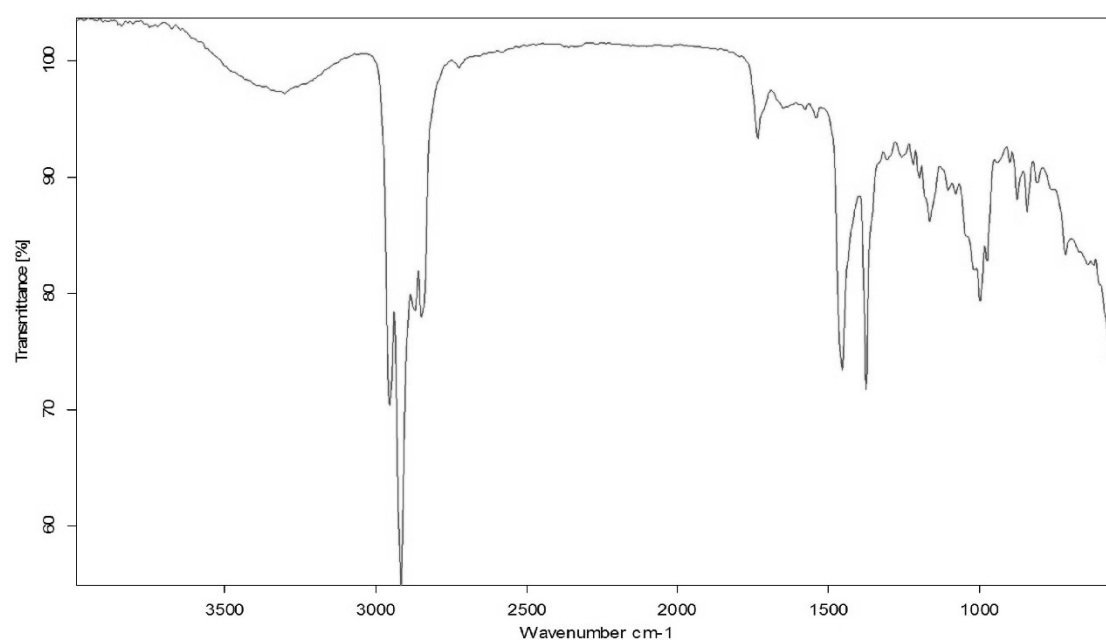


Figure S8. IR transmission spectrum of sample 4b

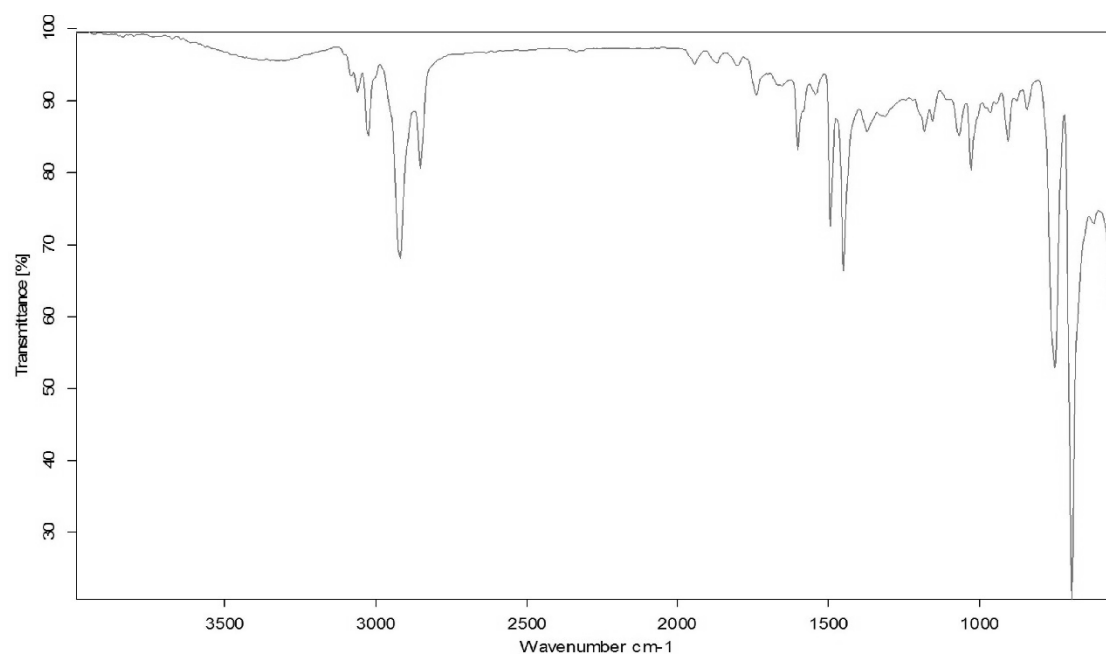


Figure S9. IR transmission spectrum of sample 5b

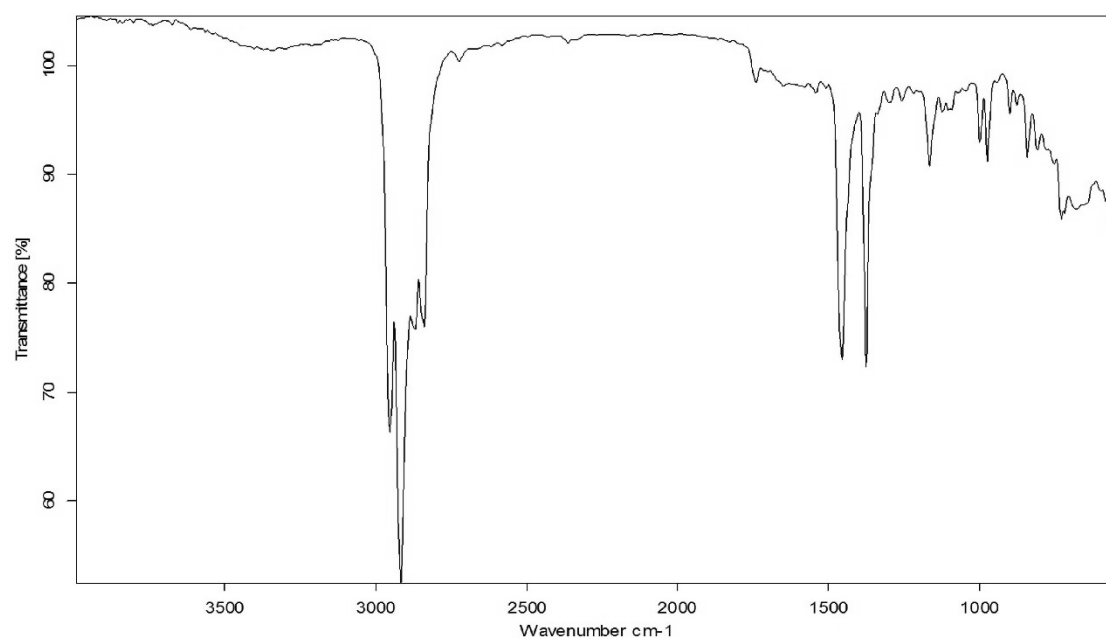


Figure S10. IR transmission spectrum of sample 6a

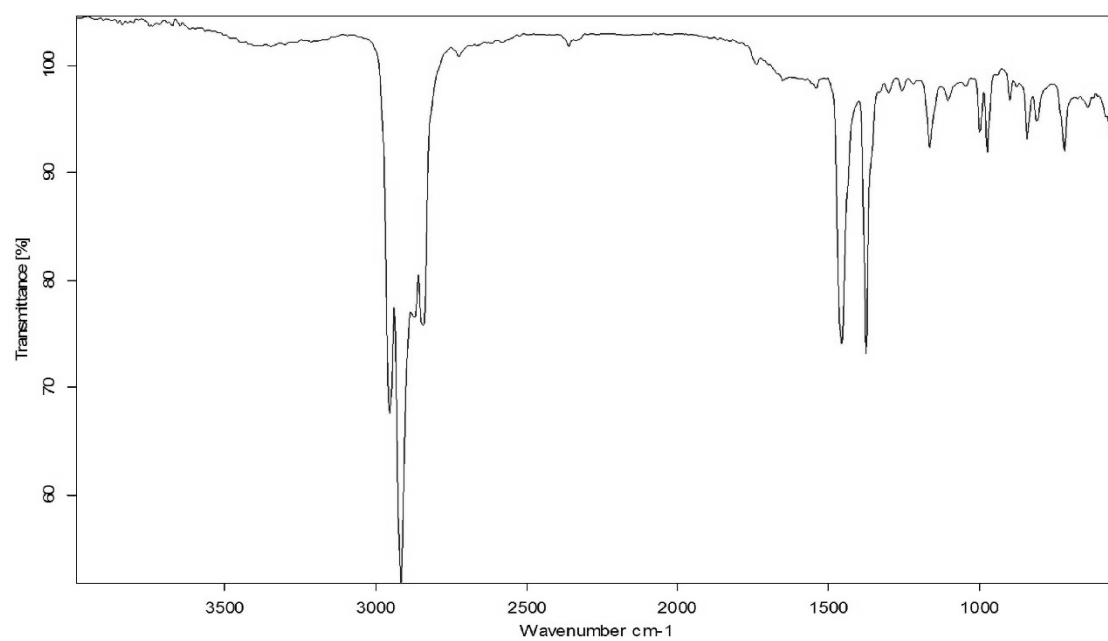


Figure S11. IR transmission spectrum of sample 6b

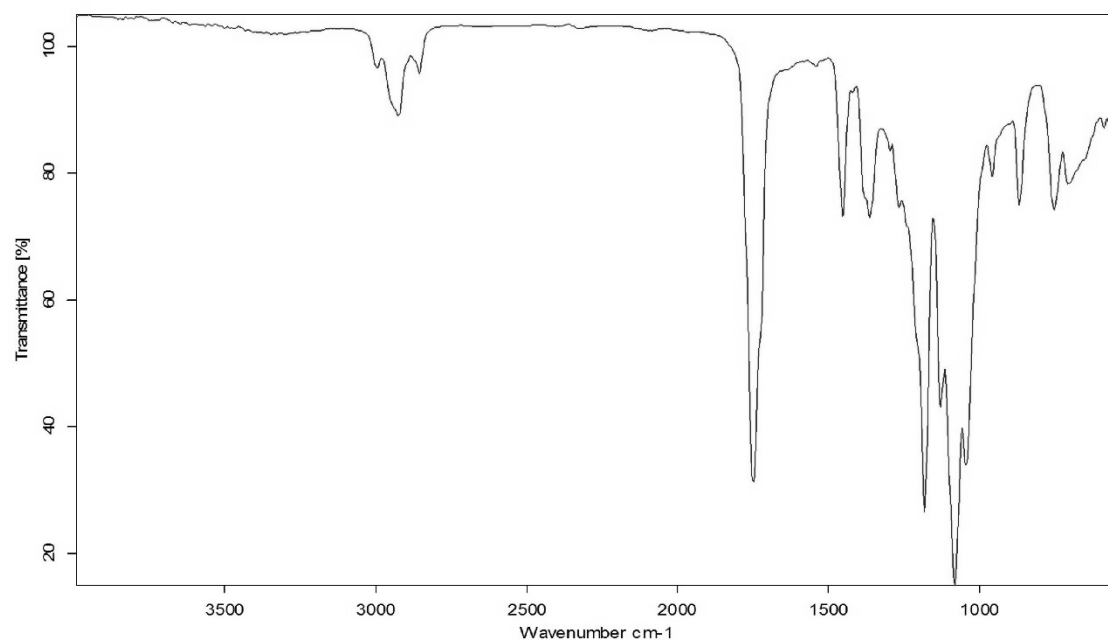


Figure S12. IR transmission spectrum of sample 6c

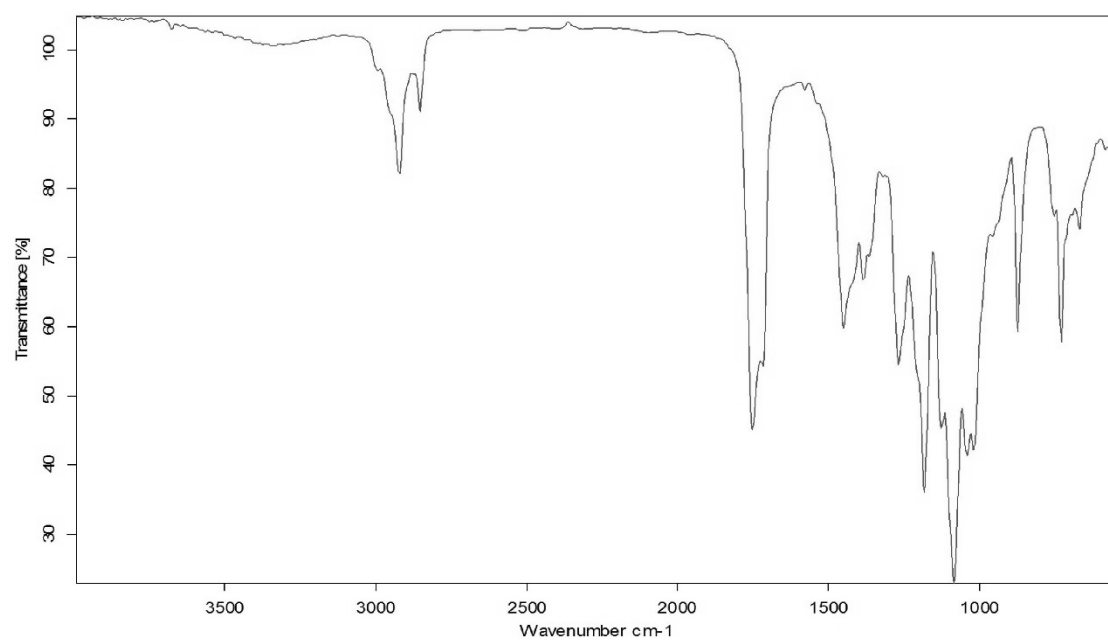


Figure S13. IR transmission spectrum of sample 6d

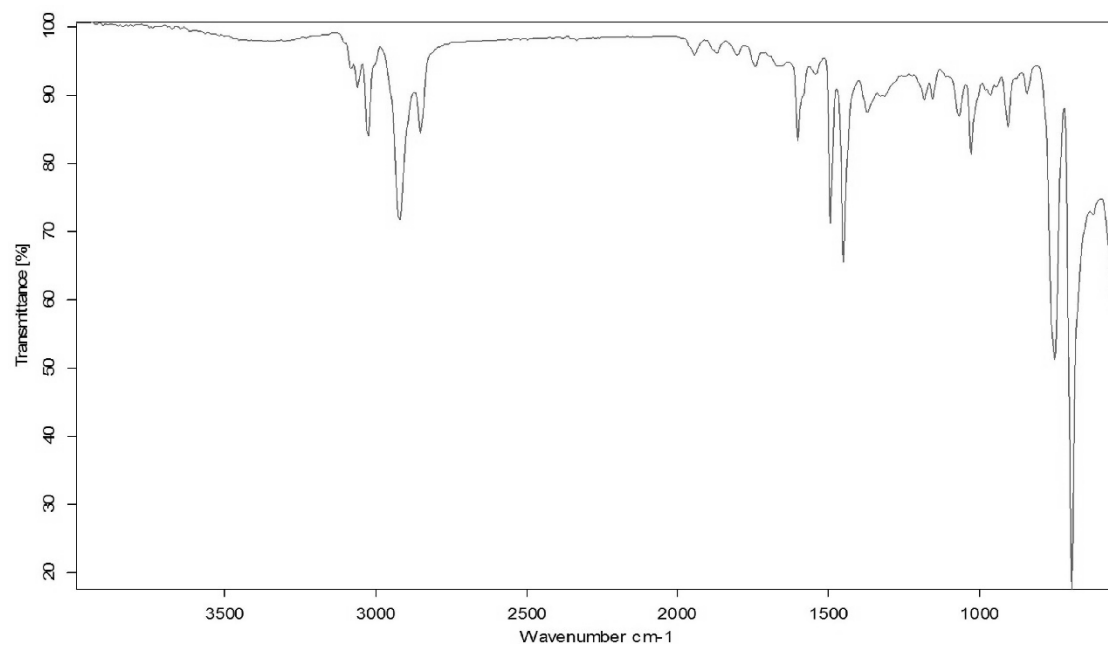


Figure S14. IR transmission spectrum of sample 7a

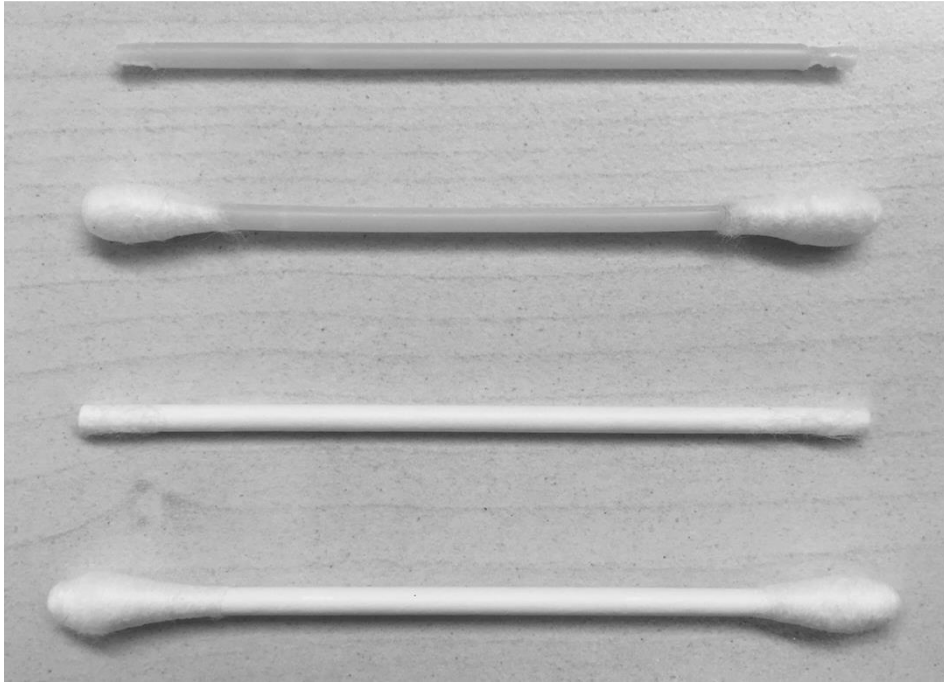


Figure S15. Photo of assessed cotton bud sticks



Figure S16. Photo of assessed cutlery, knives



Figure S17. Photo of assessed cutlery, forks



Figure S18. Photo of assessed cutlery, spoons

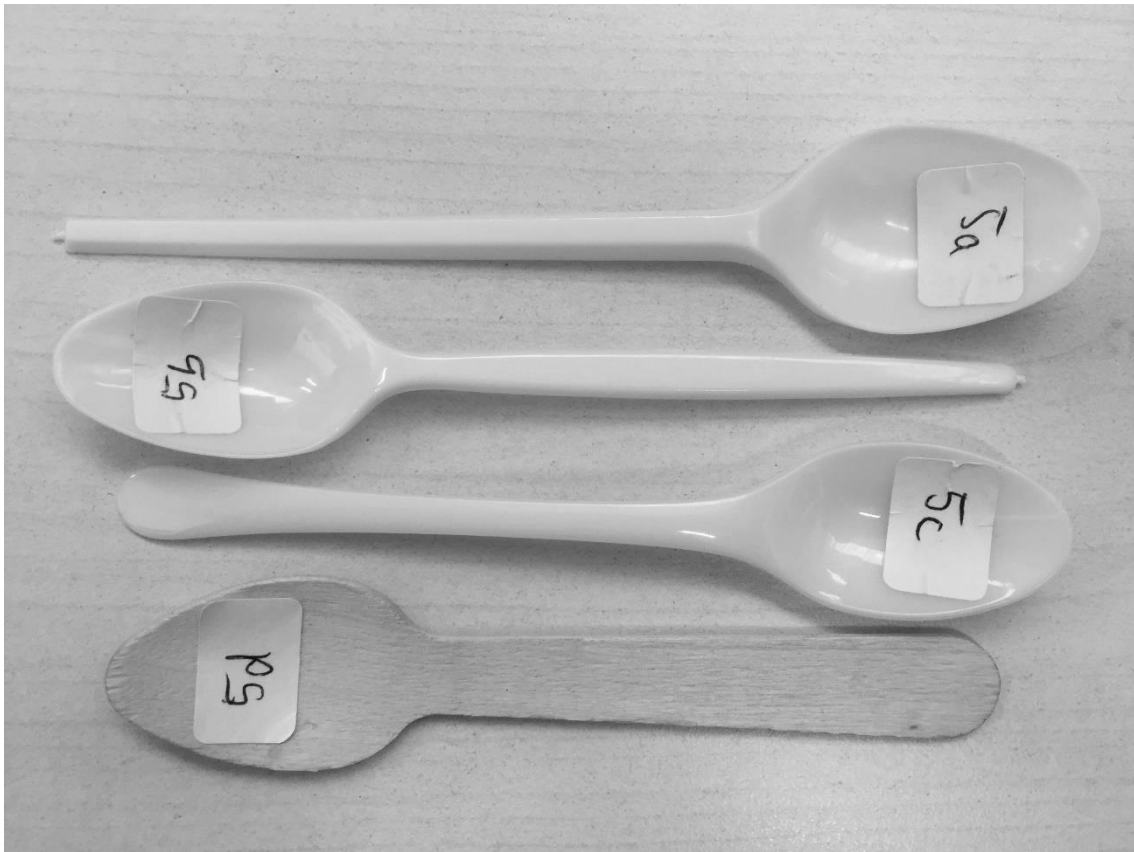


Figure S19. Photo of assessed cutlery, teaspoons



Figure S20. Photo of assessed straws



Figure S21. Photo of assessed stirrers



Figure S22. Photo of assessed plates

References

1. Okeaya International Co., Ltd. wooden fork machine, wooden spoon machine, wooden knife machine-- Okeaya International Co., Ltd.- Available online: <http://www.okeaya.com/product-cat-14.html> (accessed on May 15, 2019).
2. Shenyang Romiter Machinery Co. Ltd. Wood Cutlery Production Line Available online: <https://www.woodstickmachine.com/products/disposable-wood-cutlery-making-machine/> (accessed on May 15, 2019).
3. WRAP Wood Waste Market in the UK 2009.