

Supplementary Materials

Pyrolysis of Denim Jeans Waste: Pyrolytic Product Modification by the Addition of Sodium Carbonate

Junghee Joo¹, Heeyoung Choi¹, Kun-Yi Andrew Lin² and Jechan Lee^{1,3,*}

¹ Department of Global Smart City, Sungkyunkwan University, Suwon 16419, Republic of Korea

² Department of Environmental Engineering & Innovation and Development Center of Sustainable Agriculture, National Chung Hsing University, Taichung, Taiwan

³ School of Civil, Architectural Engineering, and Landscape Architecture, Sungkyunkwan University, Suwon 16419, Republic of Korea

* Correspondence: jechanlee@skku.edu

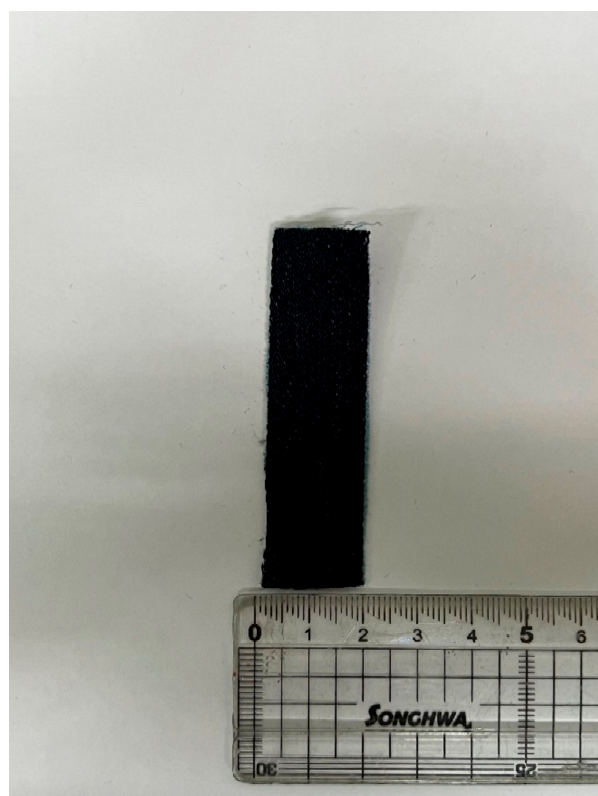


Figure S1. Denim jeans waste used as the feedstock in this study.

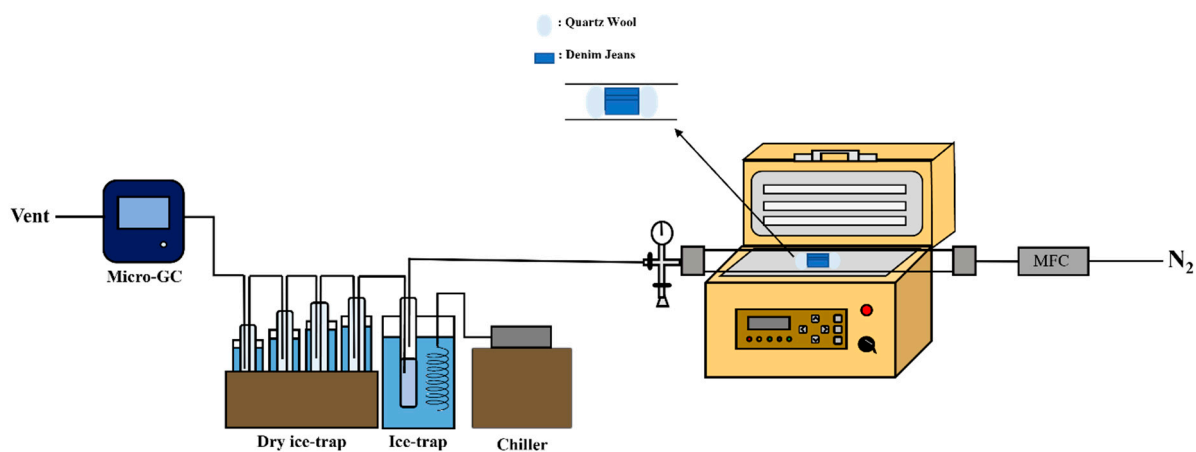


Figure S2. Scheme of the pyrolyser used for the pyrolysis of denim jeans waste.**Table S1.** Column information, and analytical conditions for the micro GC.

Model		INFICON Fusion Gas Analyzer	
Conditions		Module A	Module B
Column		Rt-Molsieve 5A	Rt-Q-Bond
Sample Pump setting	Sample pump mode	Continuous	Continuous
	Sample pump time	15 s	15 s
Column setting	Carrier gas	Argon ($\geq 99.999\%$)	Helium ($\geq 99.999\%$)
	Column pressure	20 psi	17 psi
	Initial temperature	50 °C (40 s)	50 °C (30 s)
	Ramping time	50 s	60 s
	Final temperature	100 °C (40 s)	110 °C (40 s)
	Total analysis time	130 s	130 s
Injector setting	Injector temperature	90 °C	90 °C
	Inject time	30 ms	30 ms
TCD setting	TCD temperature	70 °C	70 °C
	Data rate	50 Hz	50 Hz

Table S2. Column information, and analytical conditions for the GC/MS.

Model		GC: Agilent 8890; MS: Agilent 5977B	
Column		HP-5MS Ultra Inlet column (0.25 mm \times 0.25 μ m \times 30 m)	
Oven setting	Initial temperature	30 °C (10 min)	
	Ramping	5 °C min ⁻¹	
	Final temperature	300 °C (10 min)	
	Total analysis time	74 min	
Column setting	Column flow	1 mL min ⁻¹	
	Carrier gas	Helium ($\geq 99.999\%$)	
	Carrier gas flow	3 mL min ⁻¹	
Injector setting	Injection mode	Splitless	
	Injection volume	1 μ L	
	Injection temperature	280 °C	
MS setting	m/z range	35~550 amu	
	Aux temperature	300 °C	