

# **Supporting information**

## **Carbon Fibers from Lignin-Cellulose Precursors: Effect of Carbonization Conditions**

*Andreas Bengtsson<sup>\*,†</sup>, Pascale Hecht<sup>†</sup>, Jens Sommertunge<sup>†</sup>, Monica Ek<sup>‡</sup>, Maria Sedin<sup>†</sup> and  
Elisabeth Sjöholm<sup>†</sup>*

<sup>†</sup>Division Bioeconomy and Health, RISE Research Institutes of Sweden, Box 5604, SE-114  
86 Stockholm, Sweden

<sup>‡</sup>Department of Fibre and Polymer Technology, KTH Royal Institute of Technology,  
Teknikringen 56-58, SE-100 44 Stockholm, Sweden

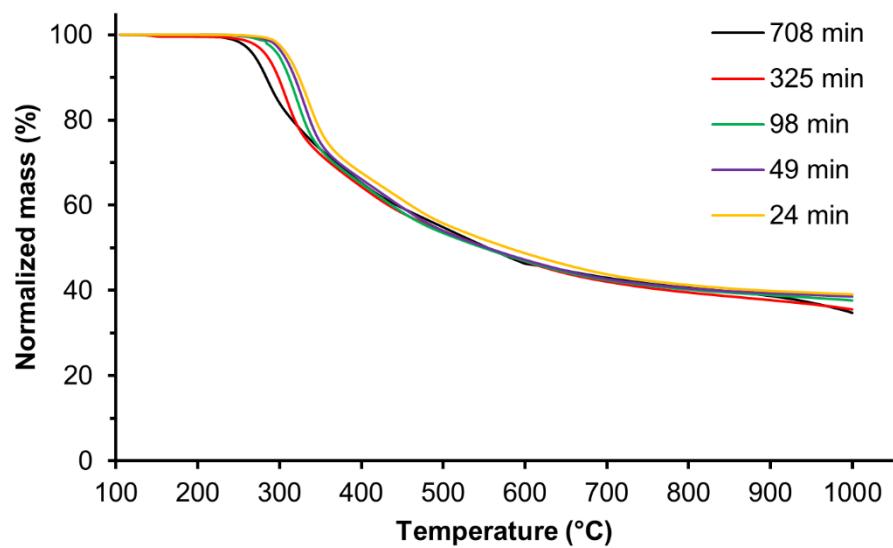
Corresponding author E-mail: [andreas.bengtsson@ri.se](mailto:andreas.bengtsson@ri.se)

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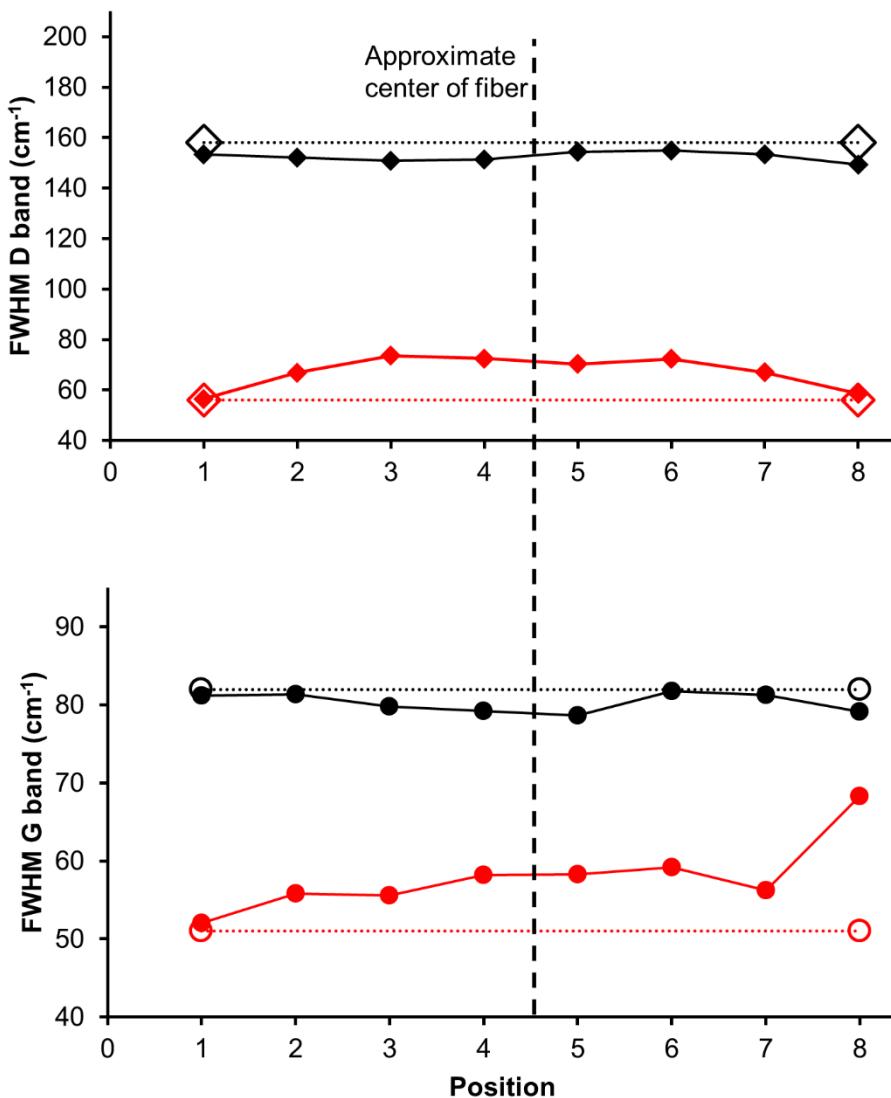
**Number of Figures: 2** (Figures S1–S2)

**Number of Tables: 2** (Tables S1–S2)

## Figures



**Figure S1.** TGA curves of the oxidatively stabilized SKL:KP precursor heated to 1000 °C in nitrogen using different carbonization times (heating rates). Data normalized to its dry content.



**Figure S2.** Radial investigation (filled symbols) of the full width at half maximum (FWHM) of D band (top) and G band (bottom) for the CFs carbonized at 1000 °C (black) and 1600 °C (red). Position 1 and 8 corresponds to CF surface. The open symbols correspond to the FWHM values obtained in the surface analysis (Figure 4a).

## Tables

**Table S1.** Effect of carbonization temperature on the tensile properties of CFs derived from SKL:KP precursor fibers. All CFs were prepared using a heating rate of 3 °C/min during carbonization. Values in parenthesis represent the standard deviation. PF=Precursor Fiber.

Temperature (°C)	Diameter (µm)	Elongation at break (%)	Young's modulus (GPa)	Tensile strength (MPa)
PF	13.3 (1.3)	3.5 (0.9)	12 (2.4)	260 (70)
Stabilized PF	11.3 (1.4)	9.2 (2.2)	3.2 (0.9)	140 (30)
600	9.0 (0.7)	2.1 (0.4)	18 (3.6)	360 (60)
800	7.6 (0.8)	1.5 (0.3)	53 (3.8)	810 (160)
1000	8.1 (0.7)	1.6 (0.2)	67 (5.1)	1050 (150)
1200	7.7 (0.8)	1.0 (0.2)	75 (5.7)	750 (140)
1400	7.5 (0.5)	1.0 (0.2)	69 (8.6)	670 (110)
1600	7.8 (1.0)	0.8 (0.1)	77 (7.7)	630 (140)

**Table S2.** Effect of carbonization time on the tensile properties of CFs derived from SKL:KP precursor fibers. All CFs were prepared using different carbonization heating rates (1.4–40 °C/min) up to 1000 °C. Values in parenthesis represent the standard deviation.

Time (min)	Diameter (µm)	Elongation at break (%)	Young's modulus (GPa)	Tensile strength (MPa)
708	7.5 (0.6)	1.6 (0.2)	64 (5.3)	1000 (140)
325	8.1 (0.7)	1.6 (0.2)	67 (5.1)	1050 (150)
98	7.3 (0.4)	1.6 (0.3)	68 (2.5)	1100 (220)
49	7.5 (0.6)	1.5 (0.3)	66 (4.5)	960 (200)
24	8.0 (0.5)	1.6 (0.3)	62 (4.6)	950 (170)