

# Supplementary Material for

## Mussel-Inspired Design of a Carbon Fiber - Cellulosic Polymer Interface Towards Engineered Biobased Carbon Fiber Reinforced Composites

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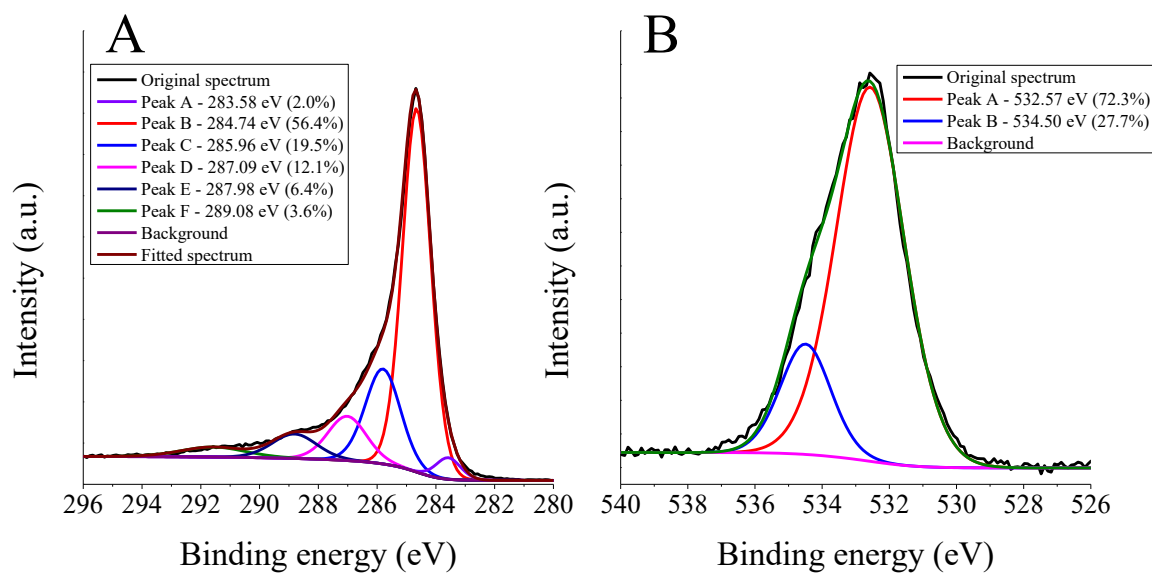
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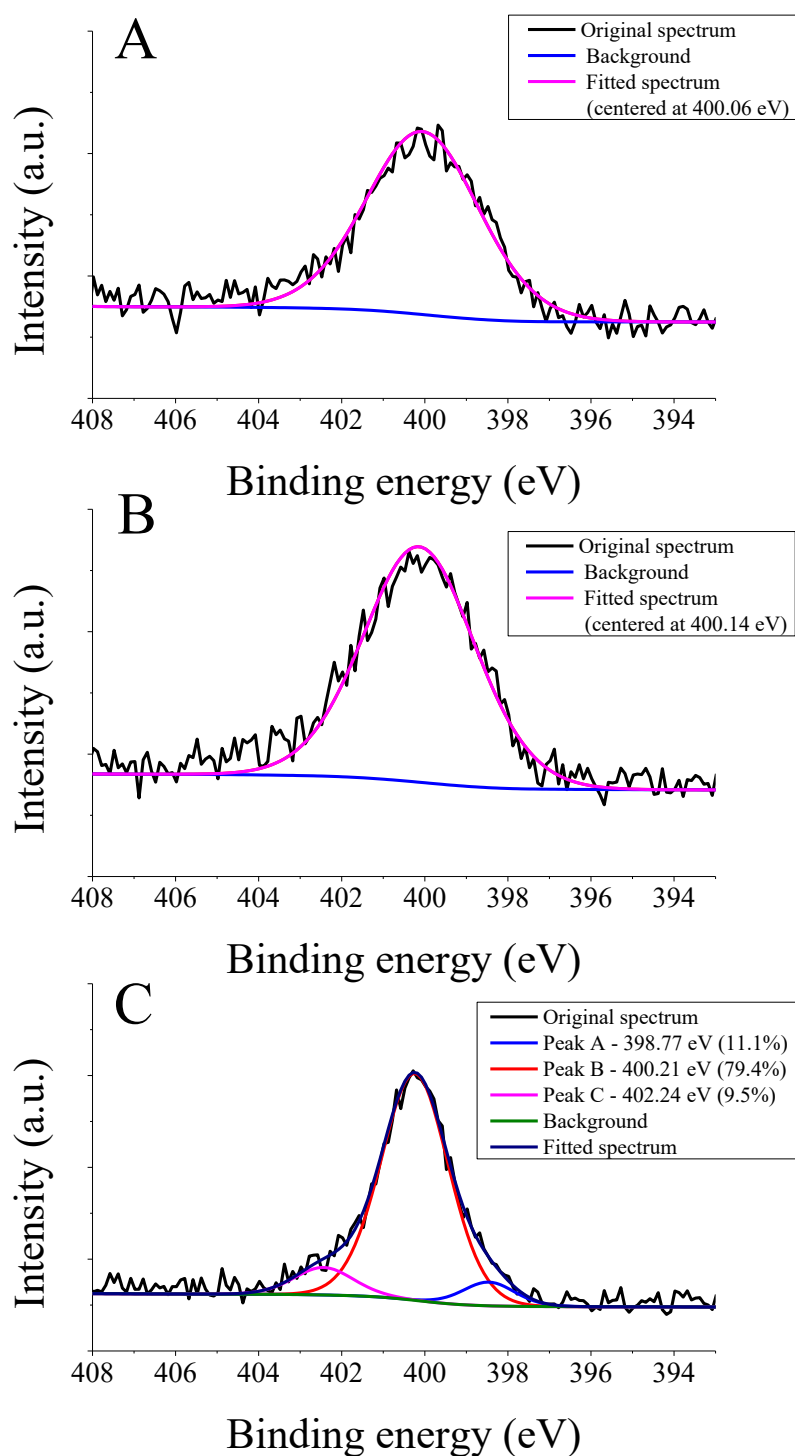
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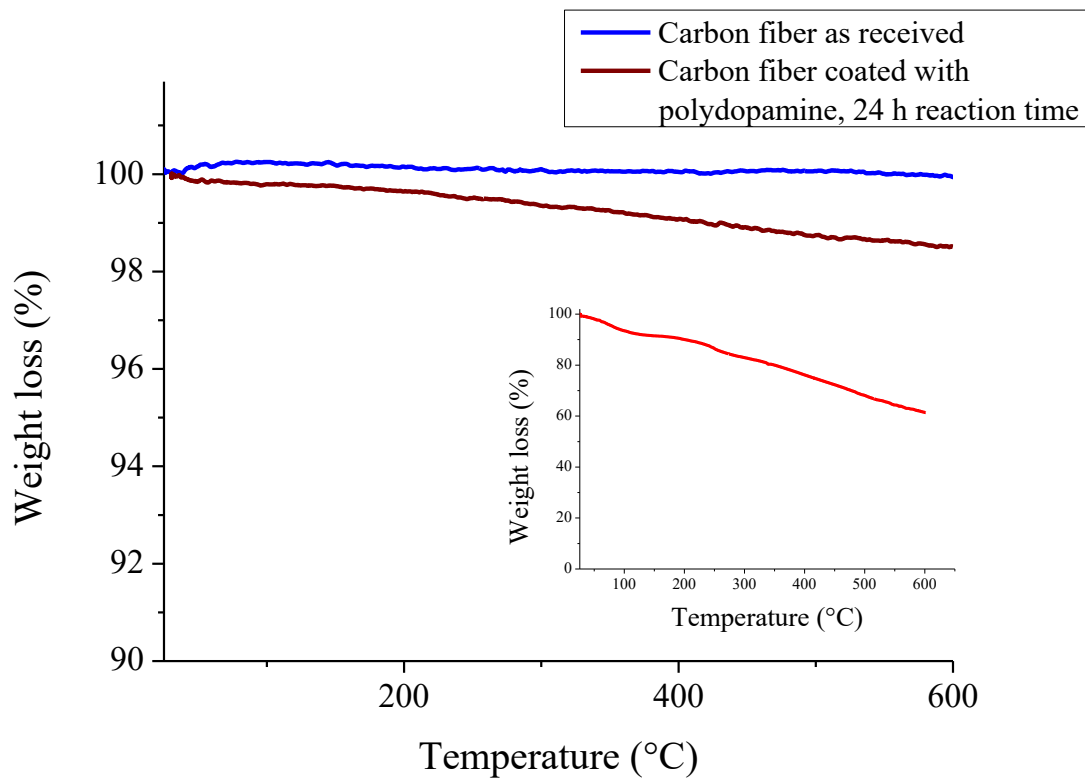
S1



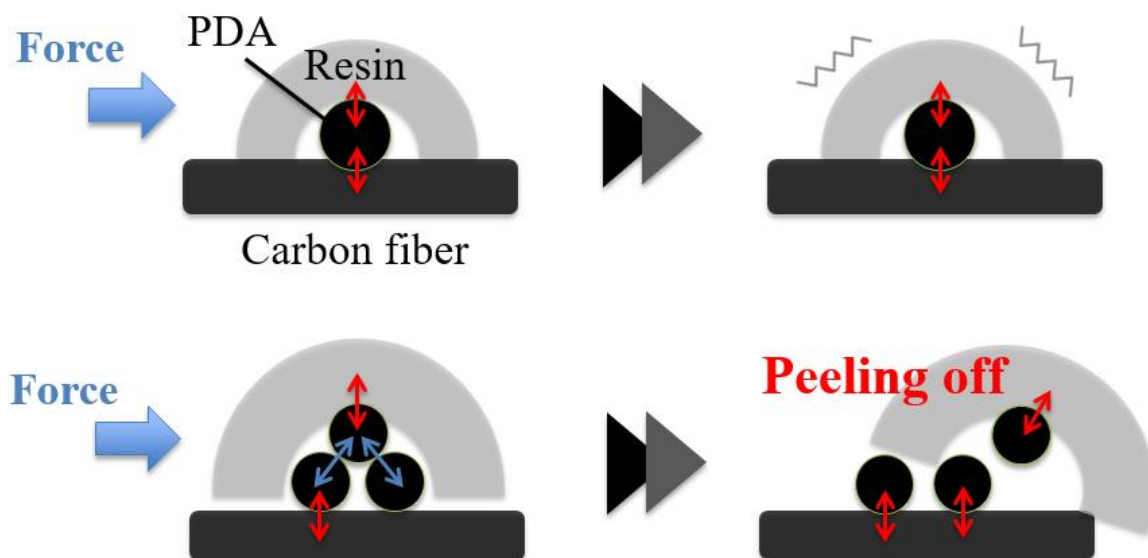
**Figure. S1.** C1s (A) and O1s (B) X-ray photoelectron spectra recorded on a control carbon fiber sample, which was treated the same way as PDA-modified carbon fibers without reagent added (only Tris buffer). The percentage values (%) in parentheses next to the binding energies indicate the contribution of the corresponding peak area to the total peak area.



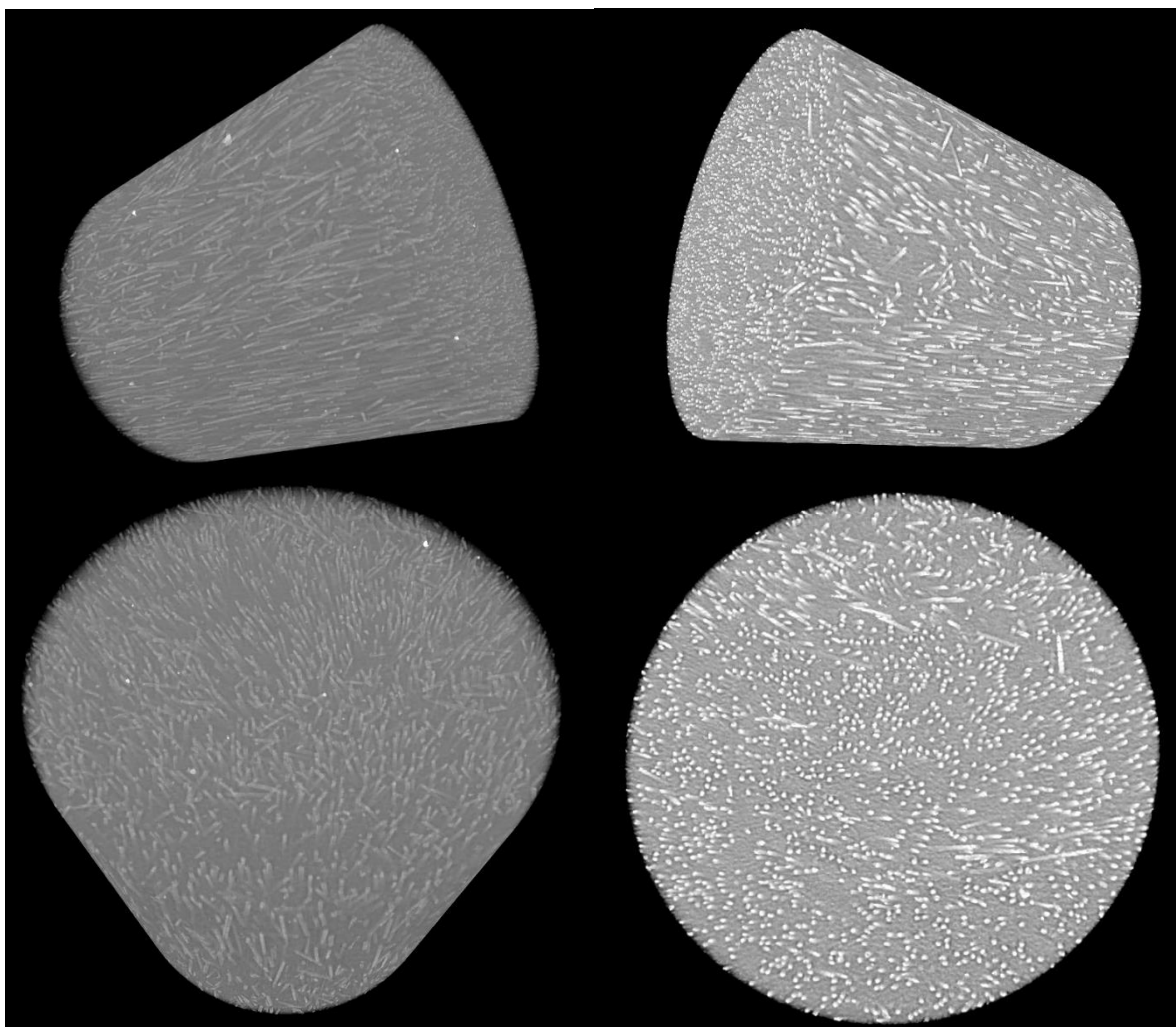
**Figure S2.** N1s X-ray photoelectron spectra (XPS) recorded on carbon fiber samples (A) as received from the supplier (Zoltek PX35), (B) on a control sample (treated the same way as PDA-modified carbon fibers without reagent added, i.e. only Tris buffer) and (C) on carbon fiber samples containing polydopamine on the surface following 24 h deposition time. The percentage values (%) in parentheses next to the binding energies indicate the contribution of the corresponding peak area to the total peak area.



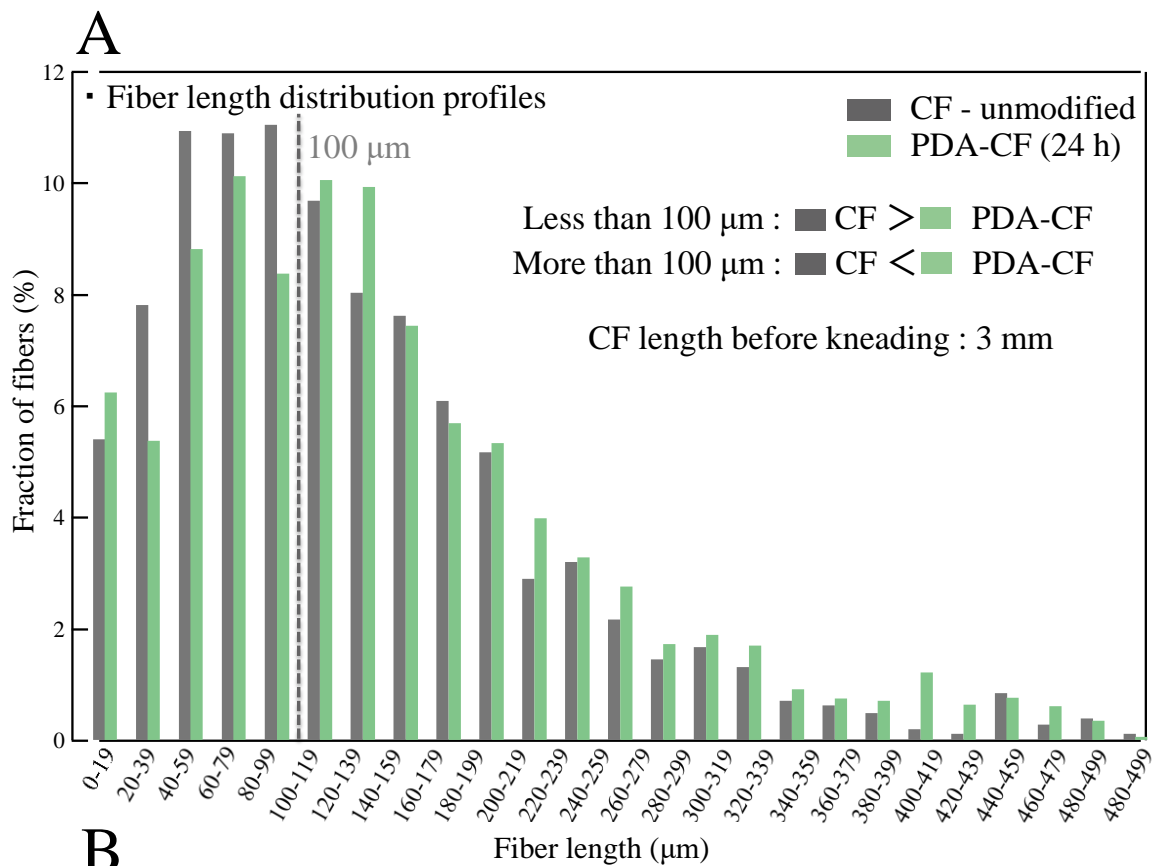
**Figure S3.** Thermogravimetric (TGA) curves recorded under nitrogen atmosphere. Inset shows the result of the TGA analysis for polydopamine.



**Figure S4.** Schematic representation of the suggested peeling-off mechanism explaining the results of the microdroplet experiments.



**Figure S5.** X-ray computed tomography images of the short carbon fiber reinforced composites containing control carbon fiber (left images) and carbon fiber with polydopamine on the surface after 24 h reaction time (right images). In case of control samples the fibers were treated the same way as modified samples without dopamine added to the solution (24 h treatment time).



**Figure S6.** (A) Fiber length distribution profiles comparing the unmodified carbon fiber (CF) sample (PX35 type, as received) with the polydopamine coated sample (24 h reaction time). (B) Microscopy image for determining the fiber length in the composite.