

SUPPORTING INFORMATION for

Lignocellulosic based Fibers Functionalization for enhanced and sustainable Wastewater Pollutants Removal

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Figure S1. SEM micrograph of the selected region of FOX-DPF used for EDX area analysis

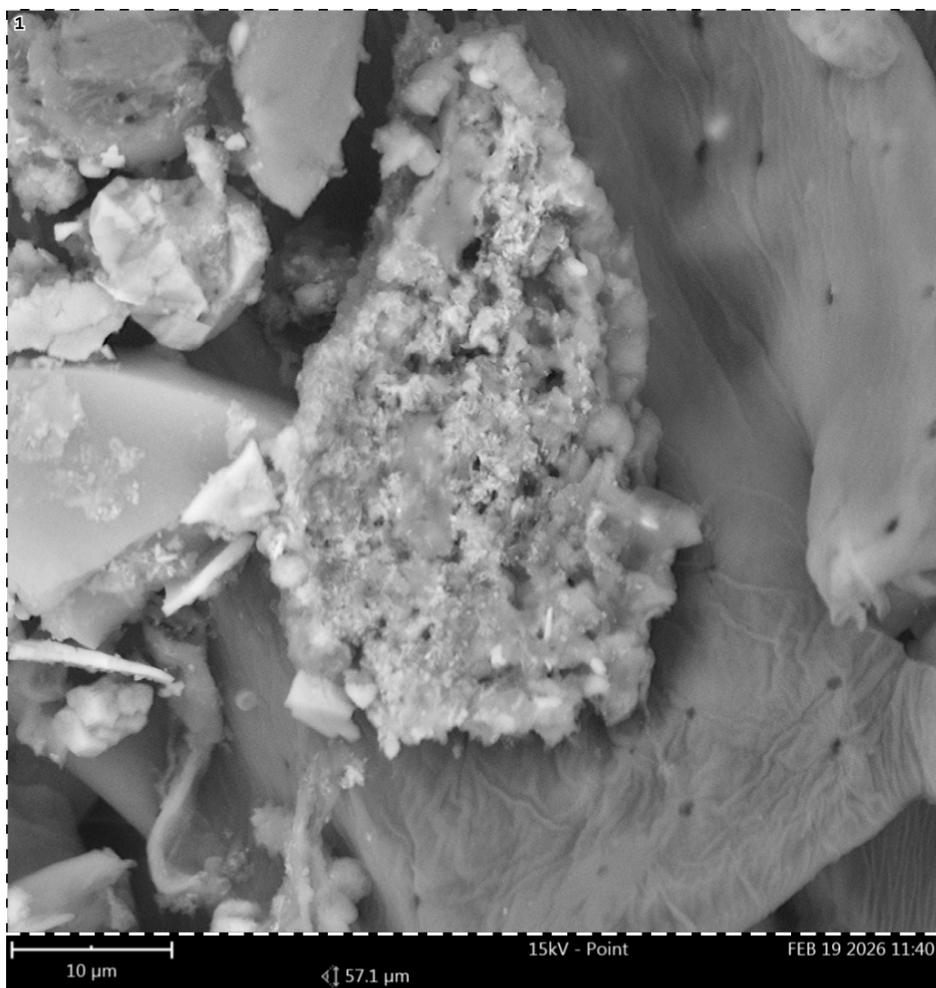
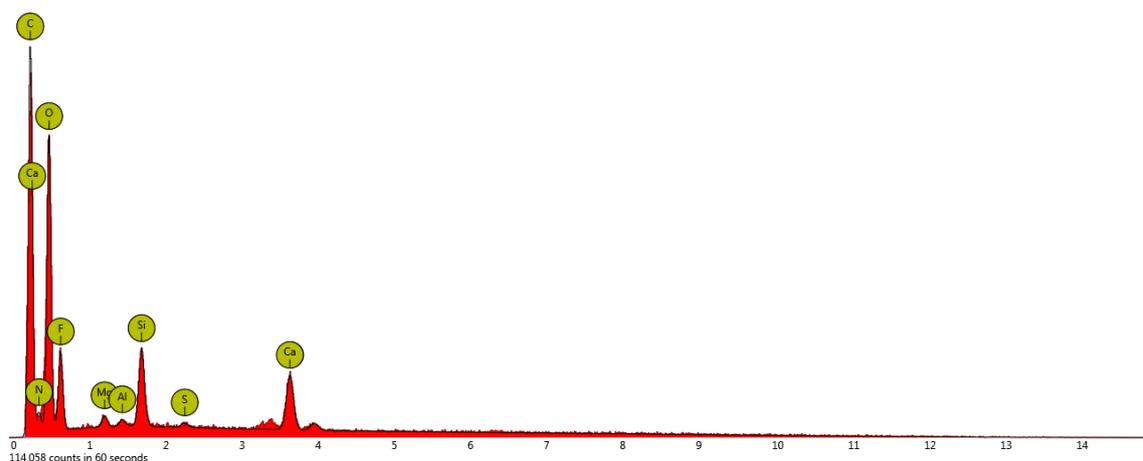


Table S1. EDX area analysis of the selected region of FOX-DPF.



| Element Number | Element Symbol | Element Name | Confidence | Concentration | Error |
|----------------|----------------|--------------|------------|---------------|-------|
| 6 | C | Carbon | 100.0 | 9.7 | 0.8 |
| 8 | O | Oxygen | 100.0 | 49.9 | 0.9 |
| 14 | Si | Silicon | 100.0 | 3.9 | 1.7 |
| 20 | Ca | Calcium | 100.0 | 5.4 | 1.7 |
| 9 | F | Fluorine | 100.0 | 26.4 | 1.8 |
| 7 | N | Nitrogen | 100.0 | 2.7 | 4.5 |
| 12 | Mg | Magnesium | Manual | 1.2 | 6.2 |
| 13 | Al | Aluminium | Manual | 0.5 | 9.8 |
| 16 | S | Sulfur | Manual | 0.3 | 11.9 |

Figure S2. SEM micrograph of the selected region of FOX-KF used for EDX area analysis

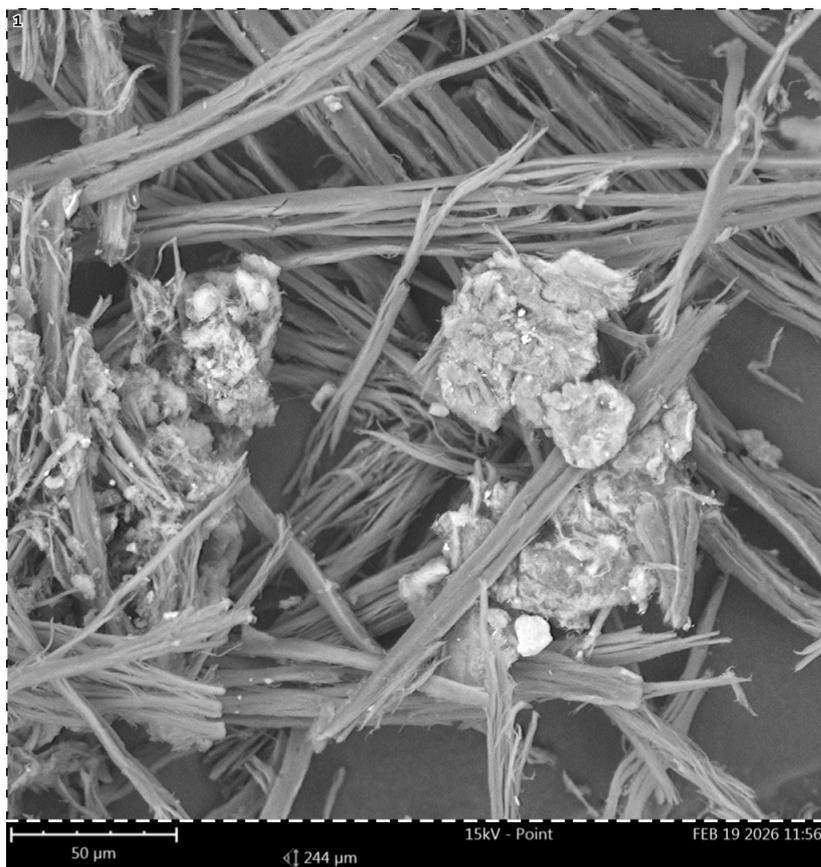
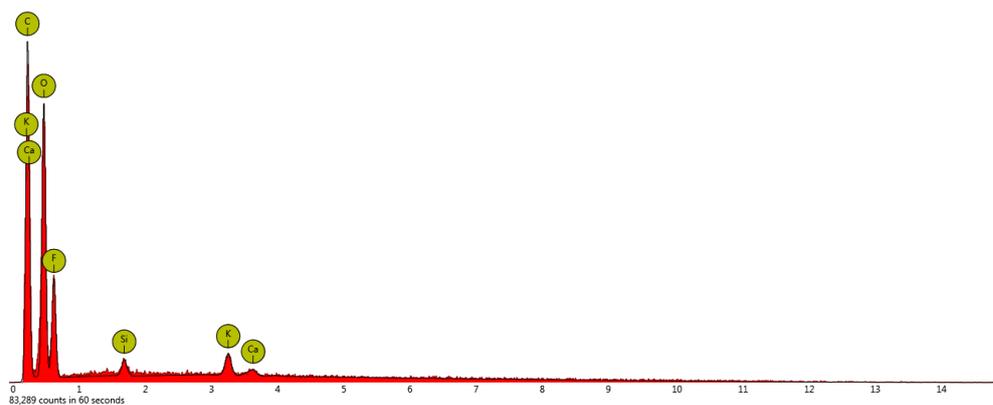


Table S2. EDX area analysis of the selected region of FOX-DPF.



| Element Number | Element Symbol | Element Name | Confidence | Concentration | Error |
|----------------|----------------|--------------|------------|---------------|-------|
| 6 | C | Carbon | 100.0 | 10.0 | 0.9 |
| 8 | O | Oxygen | 100.0 | 46.5 | 1.0 |
| 9 | F | Fluorine | 100.0 | 39.2 | 1.6 |
| 19 | K | Potassium | Manual | 2.5 | 3.3 |
| 14 | Si | Silicon | Manual | 1.1 | 4.4 |
| 20 | Ca | Calcium | Manual | 0.8 | 7.6 |

Figure S3. Thermogravimetric analysis (TGA) and derivative thermogravimetry (DTG) profiles of DPF; the DTG curve is shown together with deconvolution of the derivative peaks.

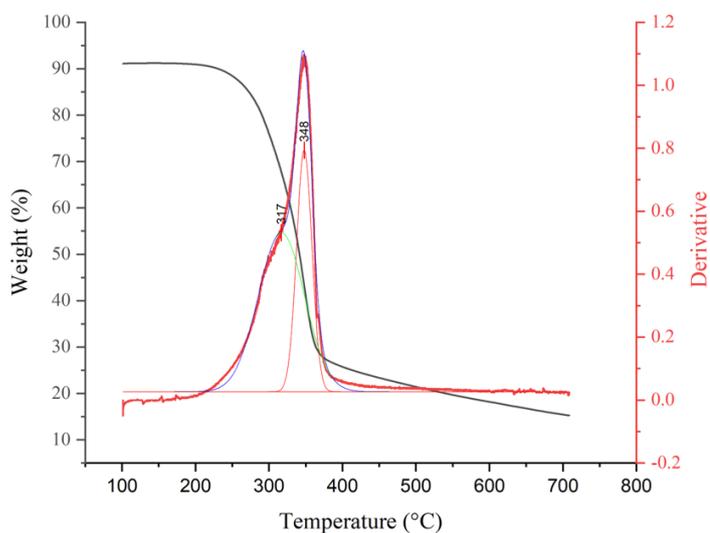


Figure S4. TGA and DTG profiles of FOX-DPF; the DTG curve is shown together with deconvolution of the derivative peaks.

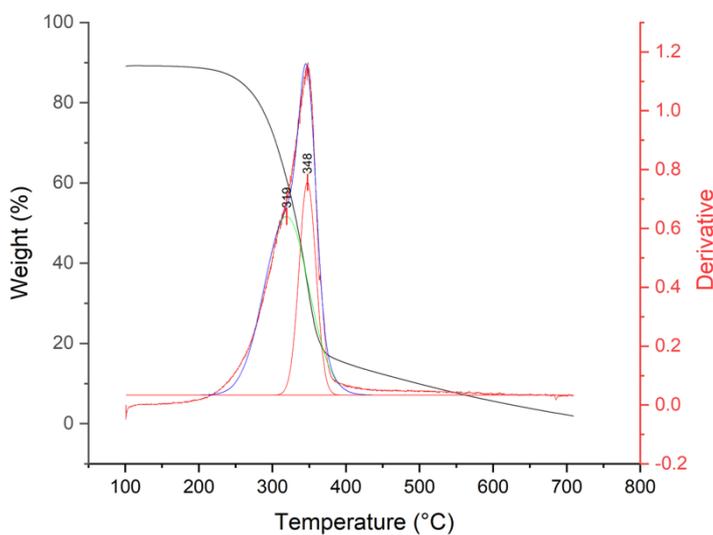


Figure S5. TGA and DTG profiles of KF; the DTG curve is shown together with deconvolution of the derivative peaks.

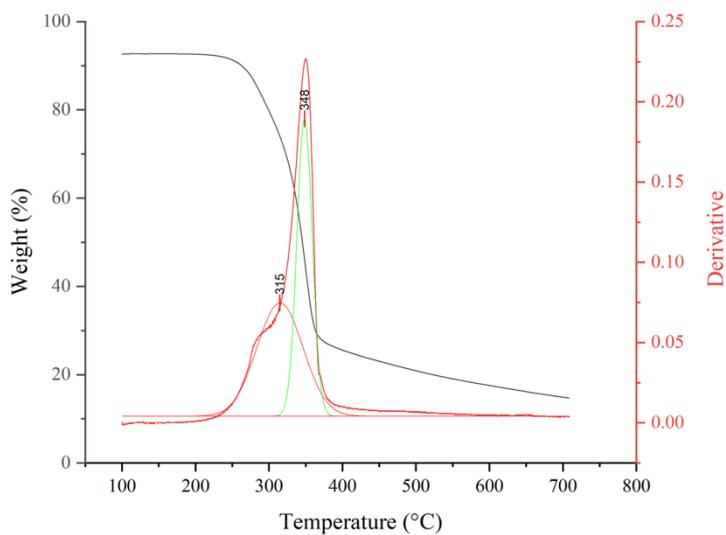


Figure S6. TGA and DTG profiles of FOX-KF; the DTG curve is shown together with deconvolution of the derivative peaks.

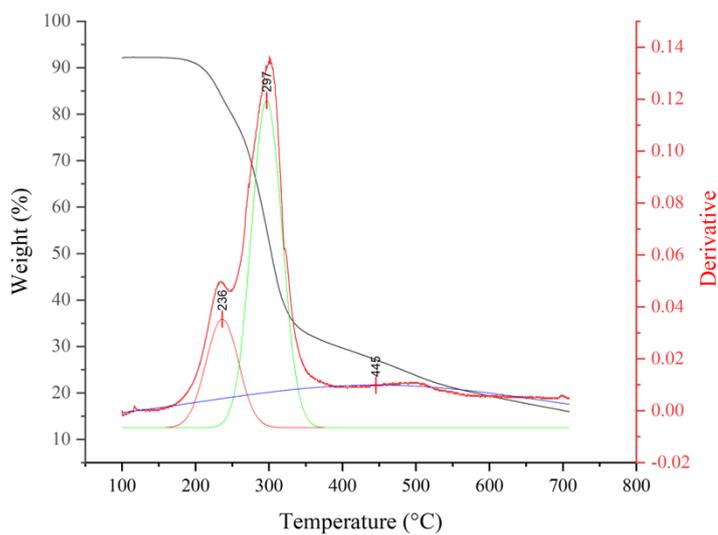


Figure S7. Rhodamine B Calibration Curve

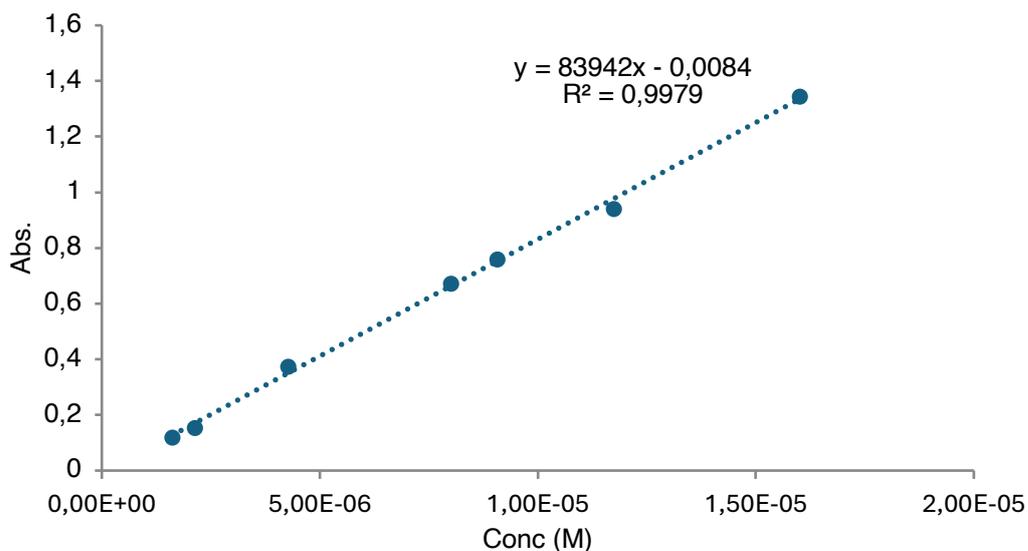


Table S3. Rhodamine B Abs. Mean at 554 nm

| Fiber | t(1h) | t(24h) |
|---------|--------|--------|
| KF | 0.726 | 0.5207 |
| KF+Fox | 0.626 | 0.2534 |
| DPF | 0.7143 | 0.2848 |
| DPF+Fox | 0.7518 | 0.3098 |

Figure S8. Acridine Orange Calibration Curve

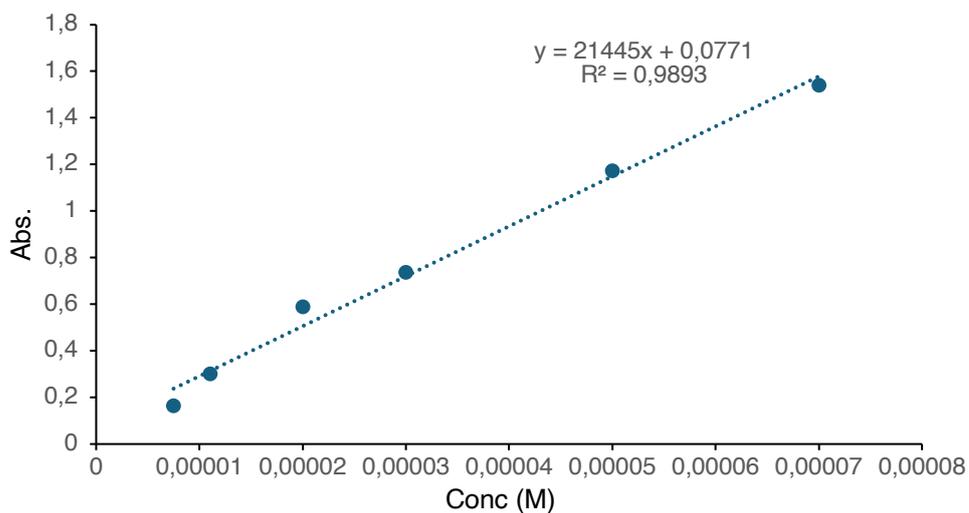


Table S4. Acridine Orange Abs. Mean at 490 nm

| Fiber | t(1h) | t(24h) |
|---------|--------|--------|
| KF | 0.1 | 0.0472 |
| KF+Fox | 0,0897 | 0.0748 |
| DPF | 0.1869 | 0.0084 |
| DPF+Fox | 0.1745 | 0 |

Figure S9. Adsorption efficiency (E%) of FOX-KF and FOX-DPF over successive Rhodamine B adsorption–desorption cycles. E% values are reported as mean ± SD.

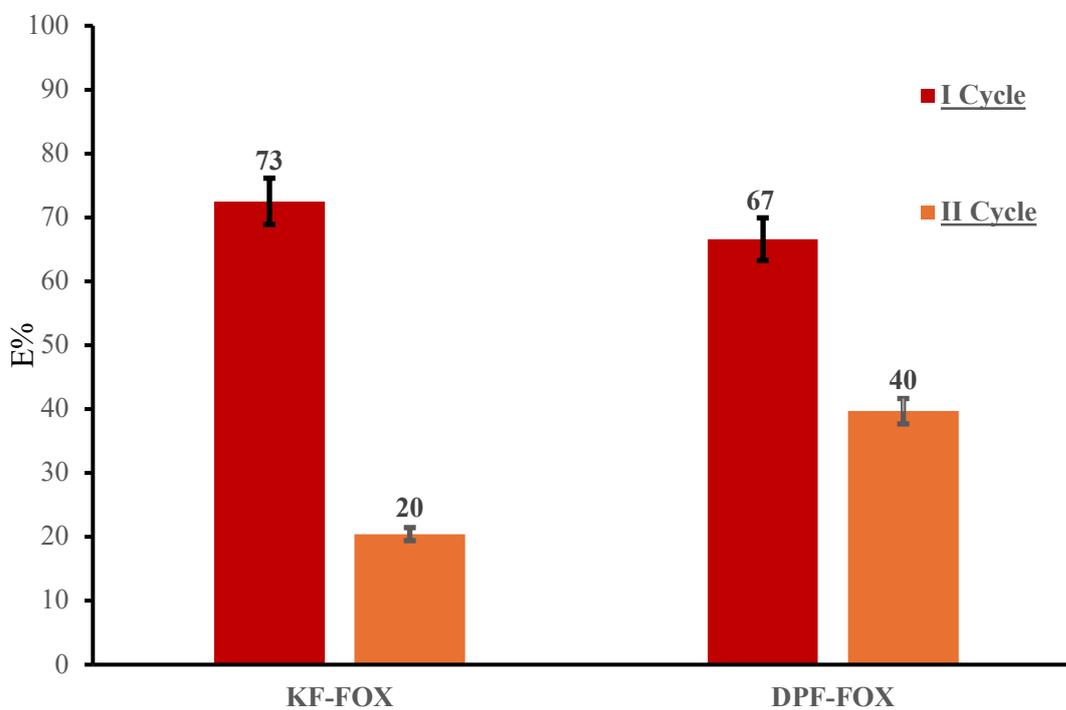


Figure S10. Adsorption efficiency (E%) of FOX-KF as a function of fiber mass after 24 h contact with RhB (2×10^{-5} M). Values are reported as mean ± SD.

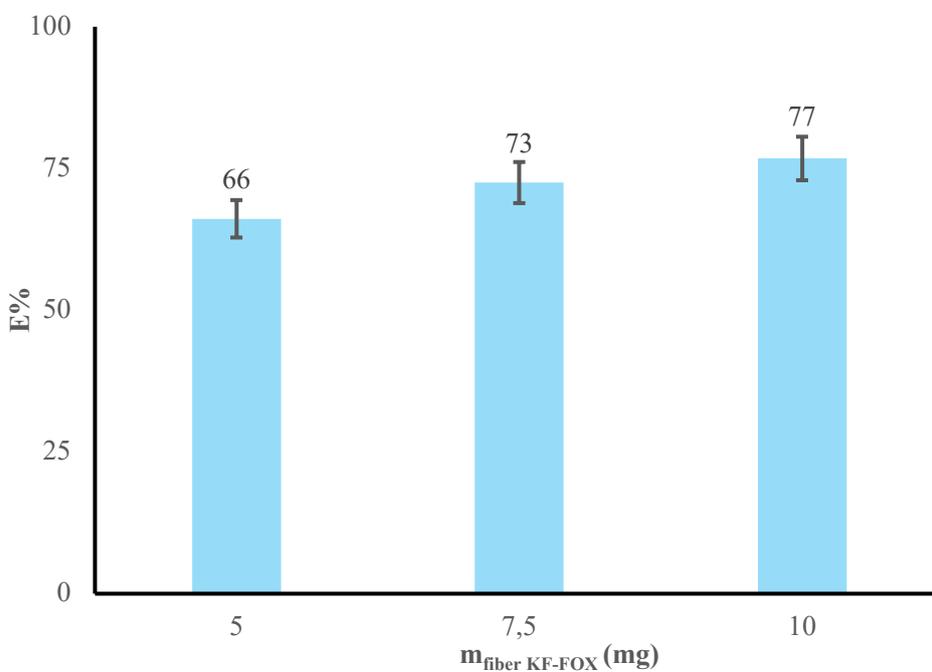


Figure S11. Adsorption efficiency (E%) of FOX-DPF as a function of fiber mass after 24 h contact with RhB (2×10^{-5} M). Values are reported as mean \pm SD.

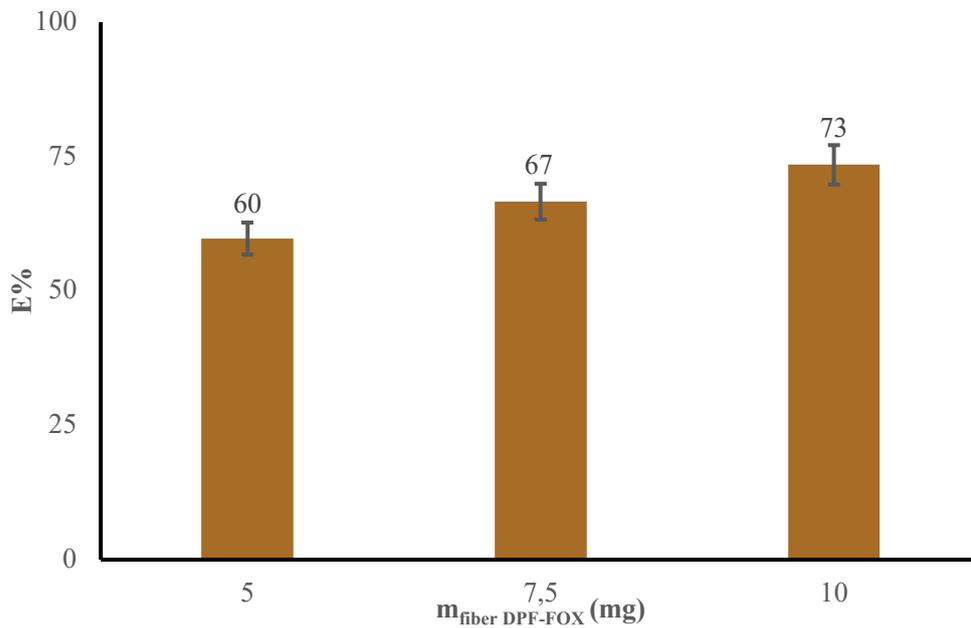


Figure S12. Adsorption efficiency (E%) of FOX-KF and FOX-DPF at different initial Rh concentrations after 24 h of contact time. E (%) values are reported as mean \pm SD.

