**Table S1.** Organic Compositions (dry ash-free basis) of

Raw and Activated Biochar Samples Synthesized at Different Pyrolysis Temperatures

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| **Effect of Temperature on Raw Char Composition** |
| Sample Name | %C (wt. %) | %H (wt. %) | %N (wt. %) | %O (wt. %) | %S (wt. %) |
| R-MS-500 | 77.23 | 3.50 | 0.47 | 18.03 | 0.77 |
| R-MS-600 | 85.60 | 2.41 | 0.29 | 11.66 | 0.03 |
| R-MS-700 | 87.97 | 2.52 | 0.41 | 8.62 | 0.47 |
| R-MS-800 | 88.93 | 2.40 | 0.32 | 8.01 | 0.34 |
| R-SG-500 | 76.01 | 3.68 | 1.13 | 18.29 | 0.90 |
| R- SG-600 | 86.21 | 2.28 | 0.64 | 10.84 | 0.03 |
| R- SG-700 | 84.03 | 2.46 | 0.99 | 12.01 | 0.51 |
| R- SG-800 | 91.38 | 1.70 | 0.92 | 5.67 | 0.34 |
| R-CS-500 | 79.59 | 3.65 | 0.95 | 14.97 | 0.85 |
| R-CS-600 | 83.27 | 2.50 | 0.91 | 13.22 | 0.10 |
| R-CS-700 | 89.68 | 2.26 | 0.80 | 6.86 | 0.40 |
| R-CS-800 | 83.81 | 2.42 | 0.79 | 12.45 | 0.54 |
| R-SB-500 | 77.28 | 2.53 | 0.74 | 18.75 | 0.70 |
| R-SB-600 | 84.49 | 2.36 | 0.61 | 12.51 | 0.04 |
| R-SB-700 | 91.75 | 2.99 | 0.76 | 3.85 | 0.65 |
| R-SB-800 | 76.54 | 1.75 | 0.52 | 20.85 | 0.35 |
| **Effect of Temperature on Activated Char Composition** |
| A-MS-500 | 78.38 | 3.47 | 1.51 | 15.98 | 0.66 |
| A-MS-600 | 83.61 | 2.54 | 1.79 | 12.02 | 0.04 |
| A-MS-700 | 88.59 | 2.60 | 0.77 | 7.63 | 0.41 |
| A-MS-800 | 90.12 | 1.88 | 1.38 | 6.36 | 0.27 |
| A-SG-500 | 77.30 | 3.72 | 2.61 | 15.62 | 0.76 |
| A-SG-600 | 83.51 | 2.47 | 1.50 | 12.42 | 0.11 |
| A-SG-700 | 87.81 | 2.44 | 1.58 | 7.72 | 0.45 |
| A-SG-800 | 87.37 | 1.62 | 2.39 | 8.28 | 0.34 |
| A-CS-500 | 79.12 | 3.54 | 2.17 | 14.51 | 0.67 |
| A-CS-600 | 83.73 | 2.79 | 1.53 | 11.87 | 0.07 |
| A-CS-700 | 86.11 | 2.43 | 1.77 | 9.20 | 0.48 |
| A-CS-800 | 85.27 | 2.49 | 1.50 | 10.29 | 0.46 |
| A-SB-500 | 74.19 | 3.72 | 2.00 | 19.33 | 0.76 |
| A-SB-600 | 85.23 | 2.44 | 1.22 | 11.07 | 0.03 |
| A-SB-700 | 84.10 | 2.79 | 1.31 | 11.30 | 0.49 |
| A-SB-800 | 91.80 | 2.07 | 1.62 | 4.15 | 0.35 |

Note: MS- Miscatanthus; SG- Switchgrass; CS- Corn stover; SB: Sugarcane bagasse. R- Raw; A- Ultrasound Amine Activated