SUPPORTING INFORMATION

Direct Three-Dimensional Characterization and Multi-Scale Visualization of Wheat Straw Deconstruction by White Rot Fungus

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This Supporting Information contains 7-page text, one table and five figures, including this cover page.

TABLE S1. O/C Atomic Ratios and Relative C1–C4 Peak Areas of Straw and Its Main Components

	material	O/C	C1 (%)	C2 (%)	C3 (%)
theoretical values	epicuticular wax (*31*)	0.11	94.0	0.0	6.0
	lignin (*32*)	0.33	49.0	49.0	2.0
	hemicellulose (*31*)	0.80	0.0	83.0	17.0
	cellulose (*32*)	0.83	0.0	83.0	17.0
measured values	untreated sample	0.44	50.6	39.5	9.9
	soaked in the PDA medium for 15 d	0.43	52.4	38.7	6.9
	fungal treated for 15 d	0.59	37.2	49.9	11.4

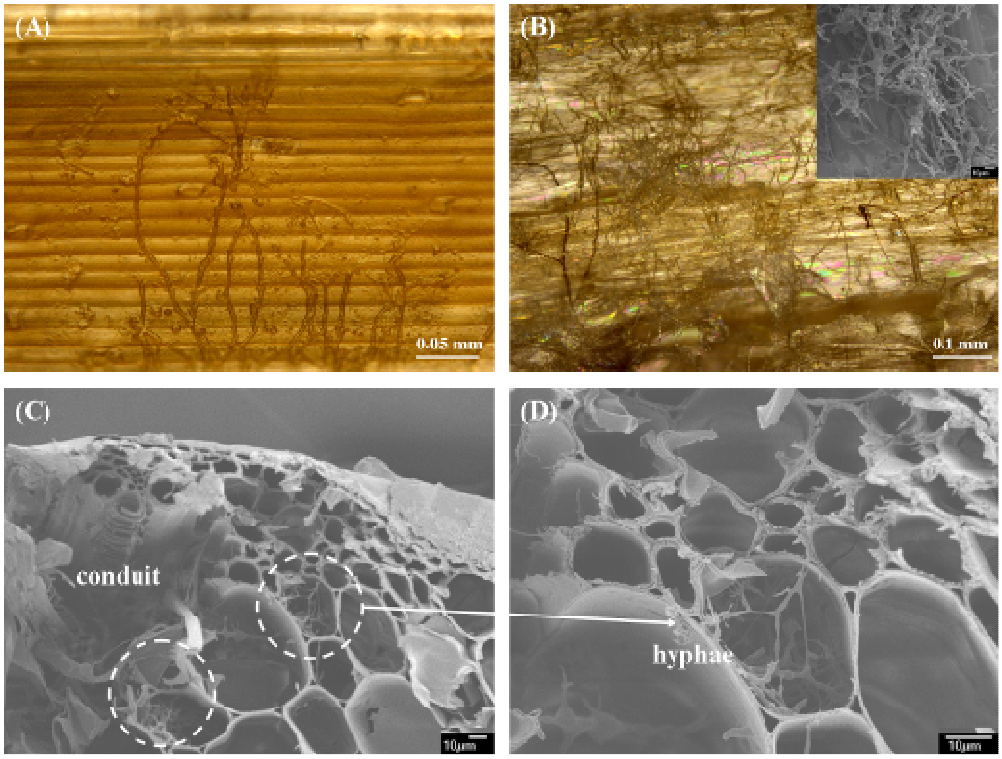

Figure S1. Straw slice after 5-d fungal degradation: (A) optical microscopic images of the outer layer surface morphology of the straw; (B) grown fungi hyphae in straw lumen after 5-d degradation (Inset shows the SEM images of the hyphae); SEM images of (C) the cross section of the straw after 5-d incubation; and (D) hyphae at high magnification.

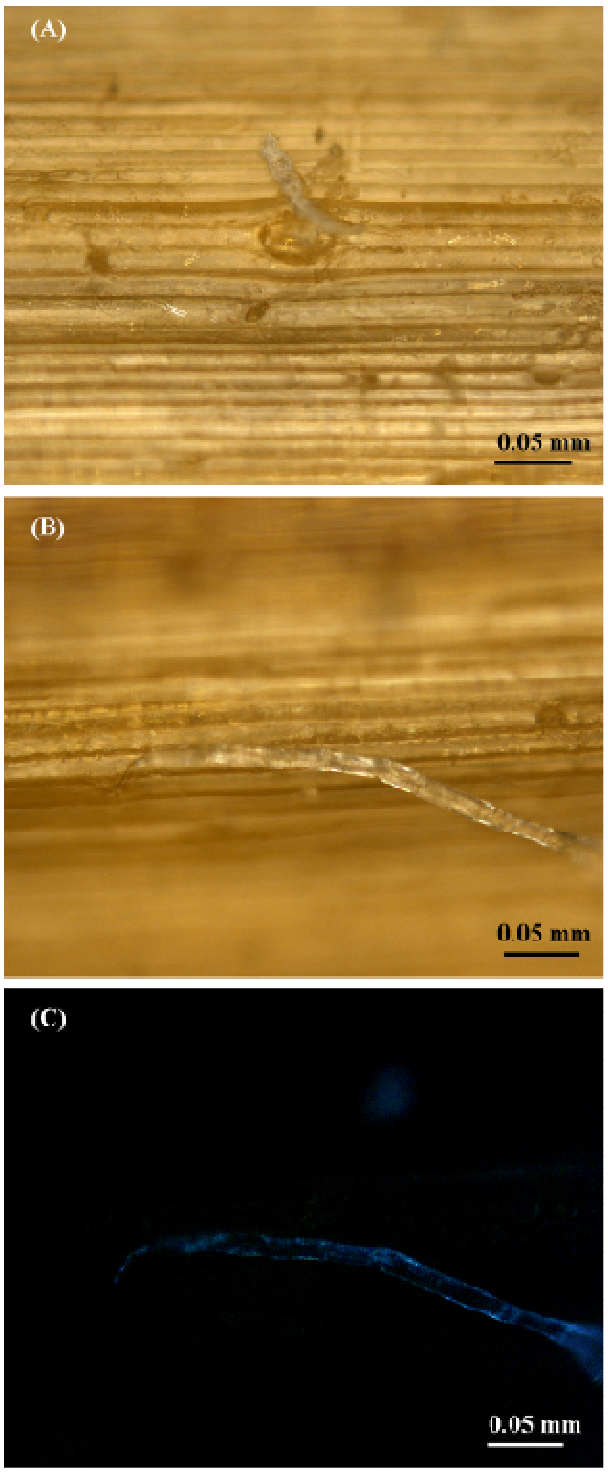

Figure S2. Images colonization of straw slice by fungal hyphae after 15 d: (A) fungal hyphae were found to penetrat the stomata of straw slice. (B) fungal hypha attached to the slice; and (C) fluorescence image of this hypha (stained by DAPI staining solution and viewed on a Nikon Eclipse Ti inverted microscope)

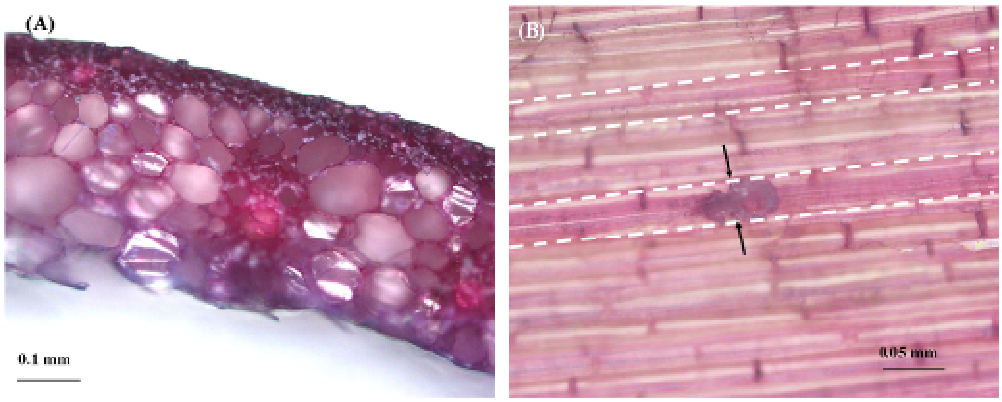

Figure S3. Lignin distribution (red color) of the straw slice stained by the phloroglucinol solution after 15-d fungal degradation: (A) cross section of the straw slice shows the lignin distributed in the vascular bundles; and (B) big holes distributed on the vascular bundles of the straw slice.

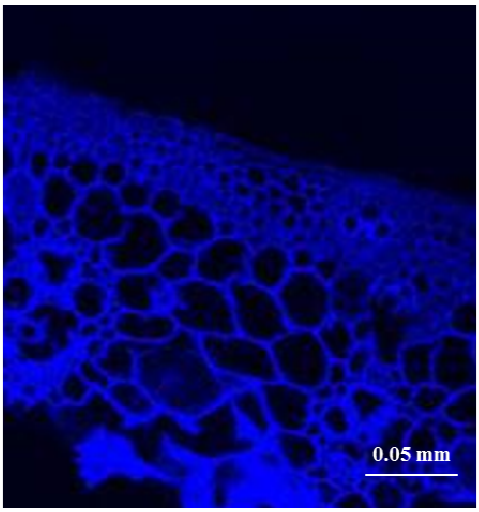

Figure S4. CLSM image of the control sample.

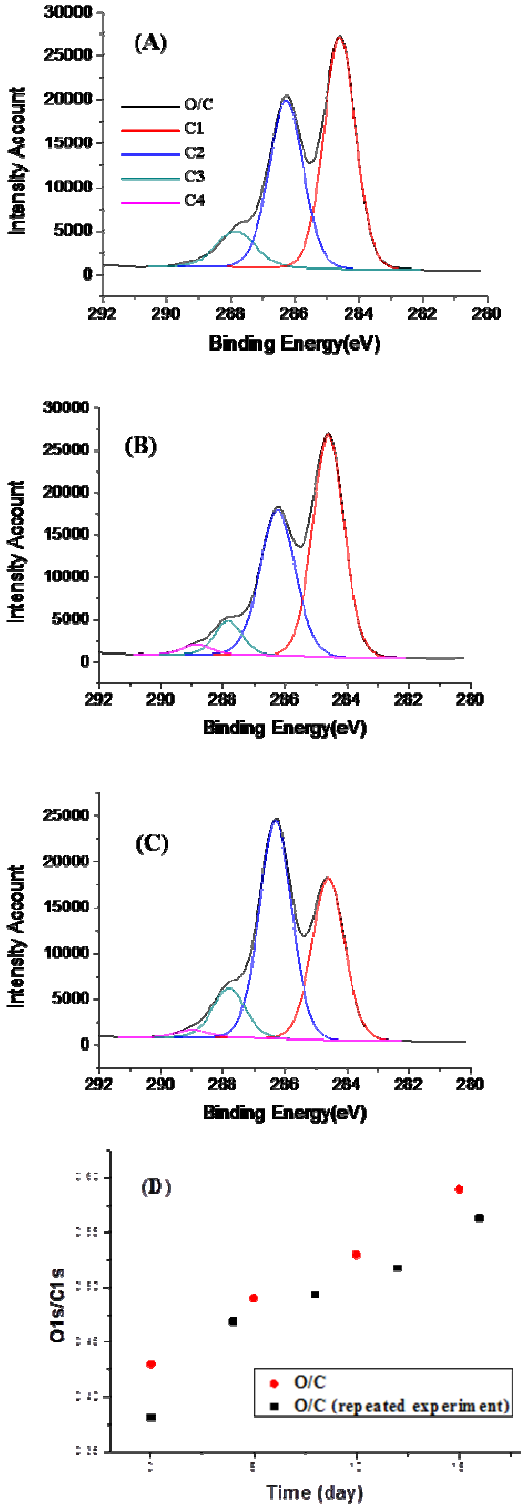

Figure S5. XPS spectra of C1s of straw slices: (A) untreated; (B) soaked in the PDA medium for 15 d; (C) *P. chrysosporium* degraded for 15 d; and (D) O/C of XPS results of the straw samples during the degradation process (the repeated experiment (black) and the original experiment (red)).