

Supplementary Information

A Novel Inherently Flame-Retardant Composite Based on Zinc Alginate/Nano-Cu₂O

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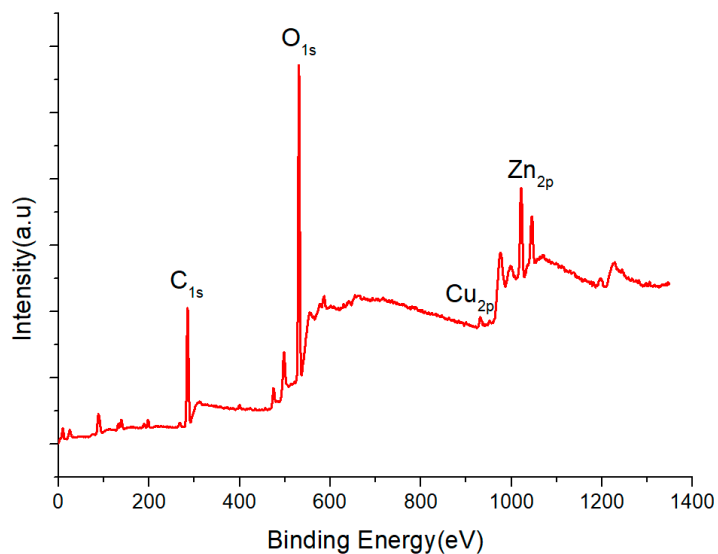


Figure S1. The XPS spectra of survey for ZnAlg/Cu₂O.

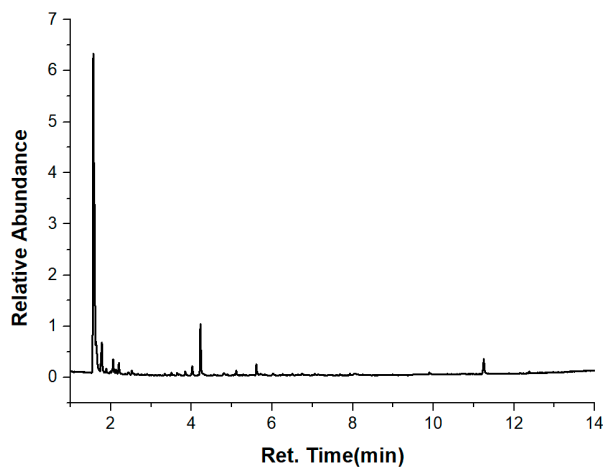
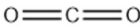
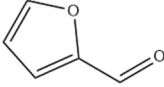

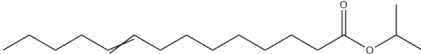
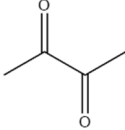
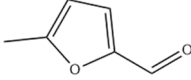
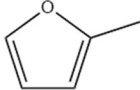

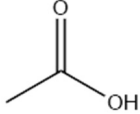
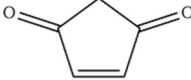

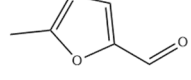
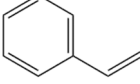
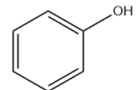
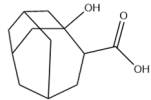
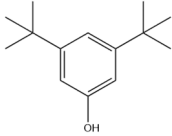
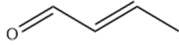
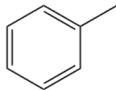
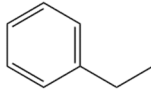
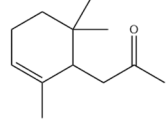
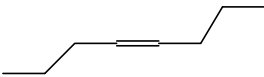
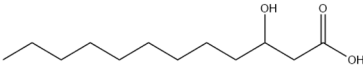

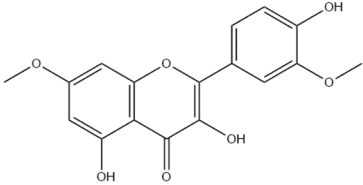
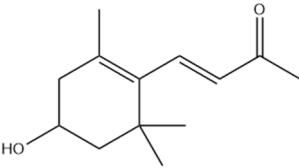
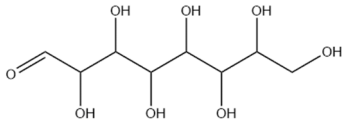
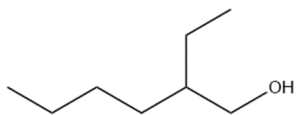


Figure S2. Py-GC-MS spectra of ZnAlg at 750 °C

Table S1. Pyrolysis products of ZnAlg at 750 °C

| Molecular structure | Name of compound | T=750 °C | |
|---|--------------------------------|----------|-------|
| | | Time | Area |
|  | carbon dioxide | 1.57 | 63.56 |
|  | furfural | 4.23 | 7.95 |
|  | acetone | 1.78 | 4.50 |
|  | i-Propyl 9-tetradecenoate | 11.25 | 2.70 |
|  | 2,3-butanedione | 2.06 | 2.13 |
|  | 2-furancarboxaldehyde,5-methyl | 5.61 | 1.41 |
|  | furan,2-methyl- | 2.13 | 0.35 |
|  | benzene | 2.52 | 0.79 |
|  | acetic acid | 2.20 | 1.35 |
|  | 4-cyclopentene-1,3-dione | 4.83 | 0.71 |
|  | 1,3-cyclopentadiene | 1.89 | 0.37 |
|  | 2-furancarboxaldehyde,5-methyl | 5.11 | 0.99 |
|  | styrene | 4.89 | 0.71 |
|  | phenol | 6.02 | 0.48 |

| | | | |
|---|--|-------|------|
|  | 3-Hydroxy-tricyclo[4.3.1.1(3,8)]undecane-4carboxylic acid | 3.65 | 0.58 |
|  | Phenol,3,5-bis(1,1-dimethylethyl)- | 9.90 | 0.43 |
|  | 2-butenal, (E)- | 2.44 | 0.41 |
|  | toluene | 3.50 | 0.49 |
|  | ethylbenzene | 4.58 | 0.28 |
|  | Cyclohexene, 1,5,5-trimethyl-6-acetylmethyl | 7.06 | 0.36 |
|  | 4-Octyne | 11.25 | 2.70 |
|  | Dodecanoic acid, 3-hydroxy | 8.04 | 0.55 |
|  | 1-Tetradecene | 7.60 | 0.10 |
|  | rhamnazin | 7.15 | 0.28 |
|  | (3E)-4-(4-Hydroxy-2,6,6-trimethyl-1-cyclohexen-1-yl)-3-buten-2-one | 6.50 | 0.61 |
|  | 2,3,4,5,6,7,8-heptahydroxyoctanal | 6.74 | 0.54 |



1-Hexanol,2-ethyl-

6.26

0.19