Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

New Roles for Metal–Organic Frameworks: Fuels for Environmentally Friendly Composites

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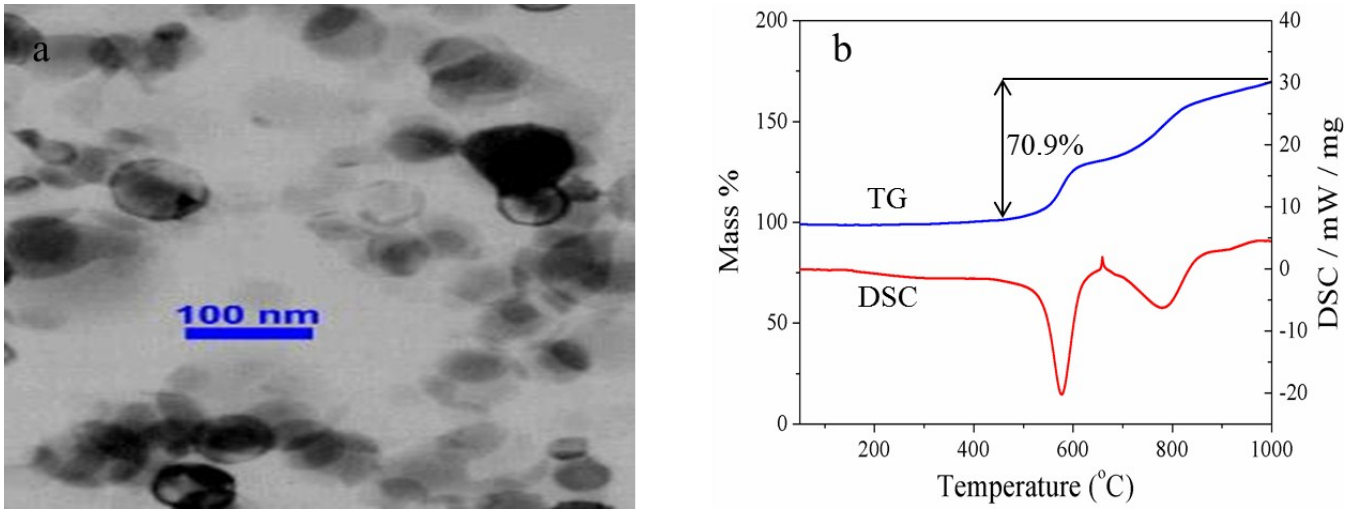

Figure S1. TEM image and TG/DSC curves of aluminum nanoparticle: a) TEM; b) TG/DSC curves at air atmosphere, sample: 1.556 mg. According the TG/DSC curves, the aluminum content was calculated to be 80% [(Al%) = 70.9% x 27/24 = 80%].

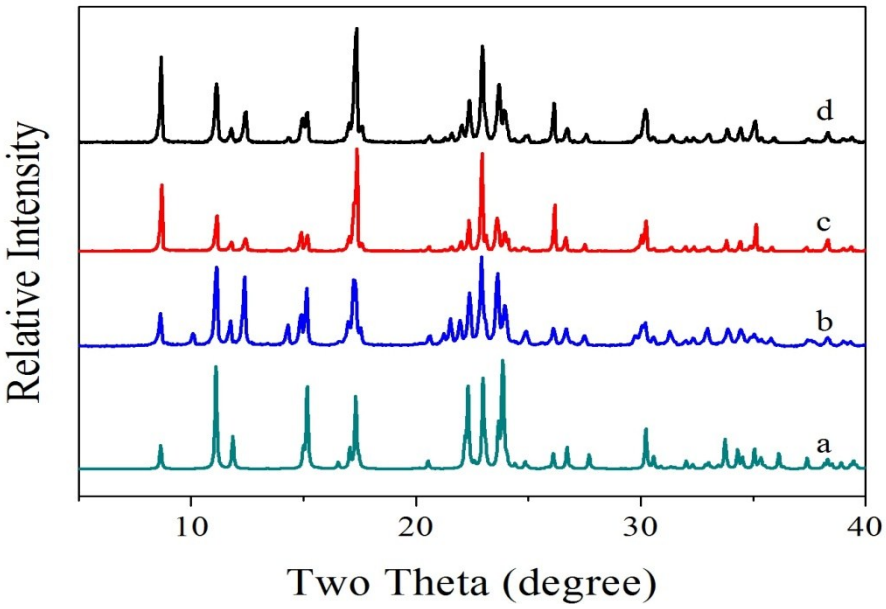

Figure S2. PXRD patterns of MOF(Cu): a) the simulated single-crystal diffraction data of MOF(Cu); b) as-prepared MOF(Cu); c) MOF(Cu) after heated at 160 °C for 24 h; d) MOF(Cu) after heated at 200 °C for 24 h.

According to the above PXPD patterns, many peak positions of the four samples are almost consistent, which showed that the framework of MOF(Cu) was well maintained even after it has been heated at 200 °C for 24 h in air, confirming the high stability of MOF(Cu).

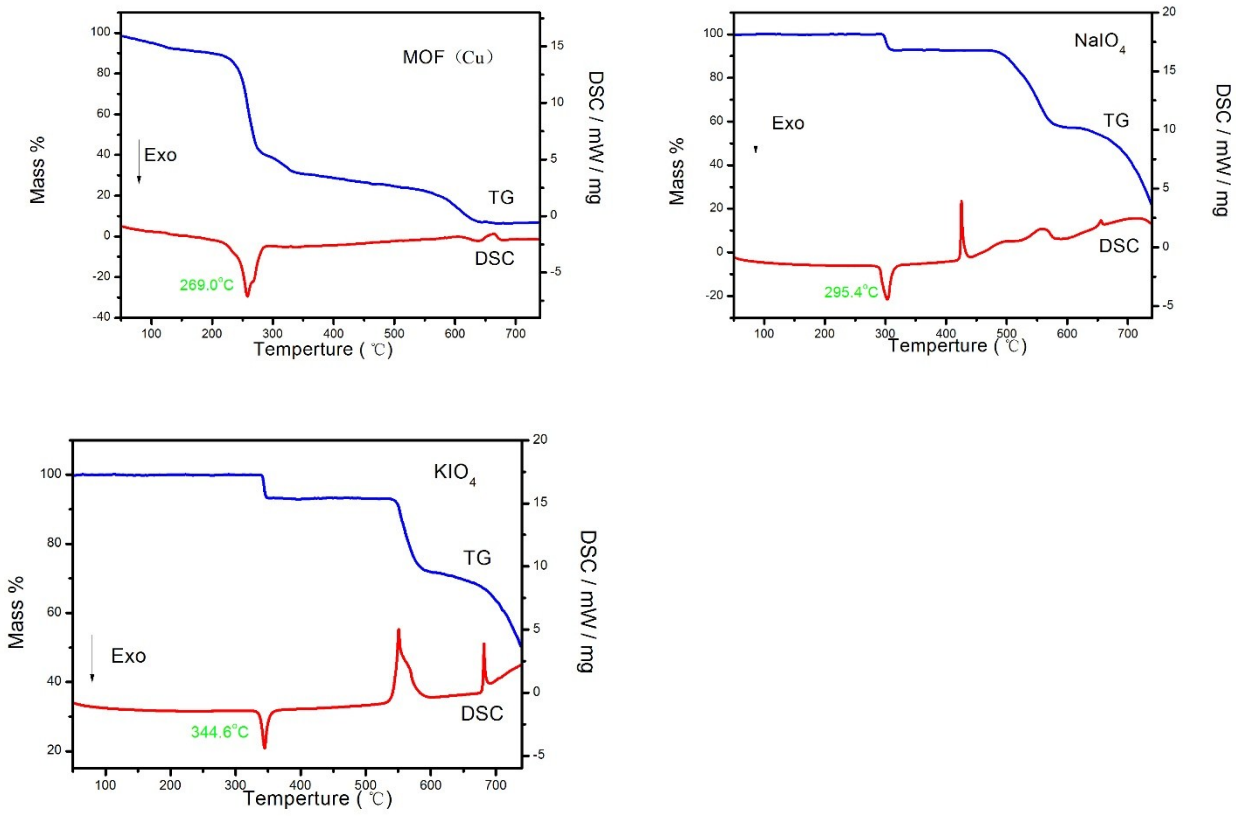

Figure S3. DSC/TG curves of primitive particles. The onset temperatures are indicated by the lowest temperature that can induce the spontaneous exothermic reaction of a sample.

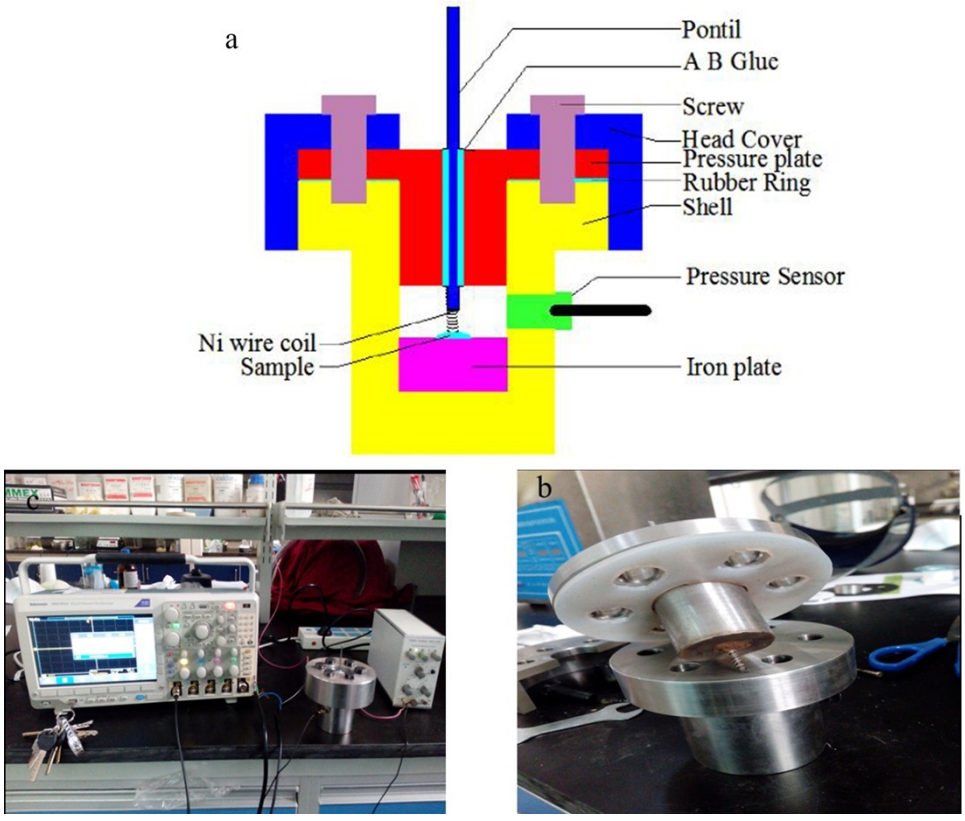

Figure S4. The testing system for pressure signal: a) illustration of the combustion cell; b) photograph of the combustion cell; c) photograph of the testing system for pressure signal.

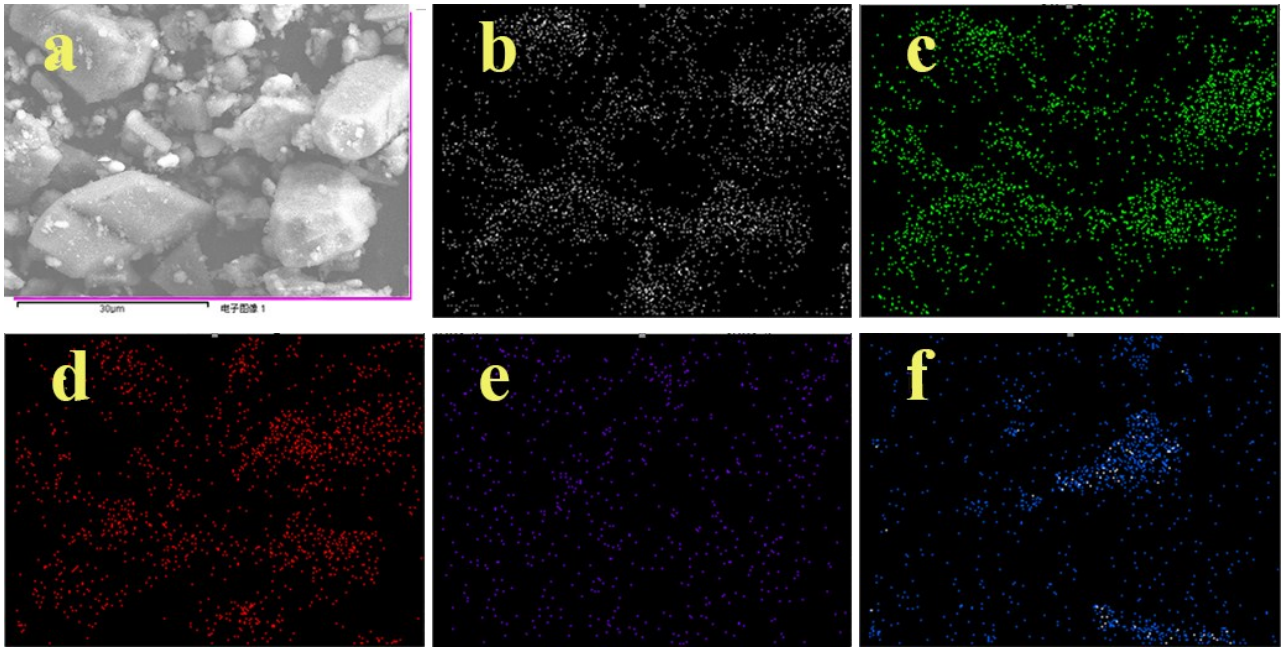

Figure S5. SEM image and EDS elemental maps of the MOF(Cu)/KIO_4 composite: a) SEMimage; b) C (white); c) N (blue) ; d) O (red); e) Cu (yellow) ; f) I (purple).

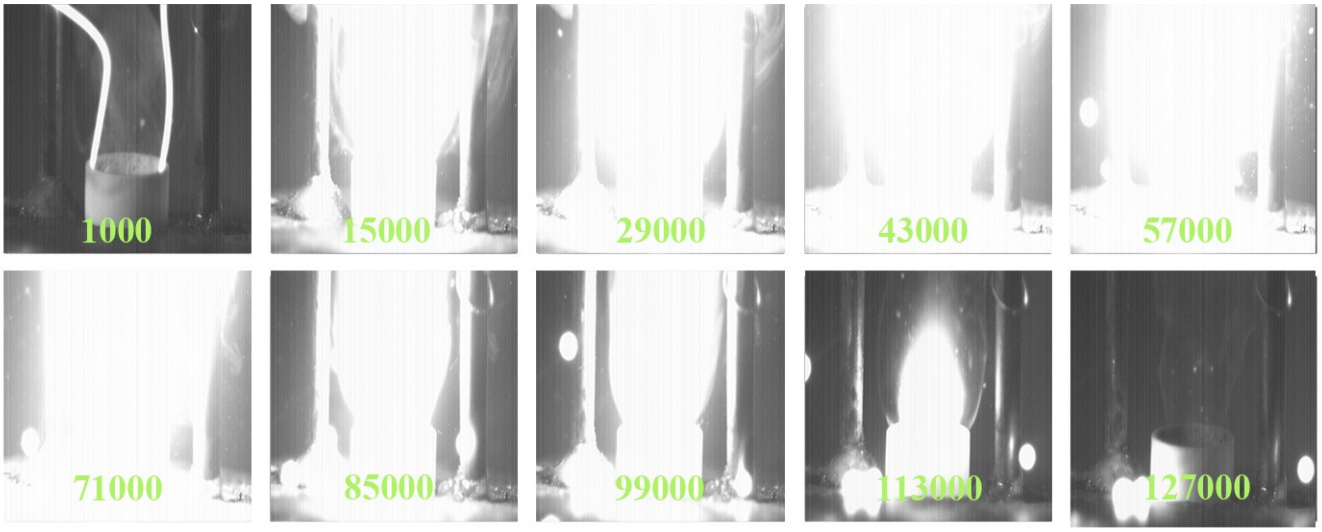

Figure S6. Visualization of combustion of MOF(Cu)/KIO_4 (a) and Al/CuO (b) composite, as captured by high-speeding camera. The labeled numbers are time elapsed (μs) after triggering.