Novel CO_2 reduction catalysts driven by visible light

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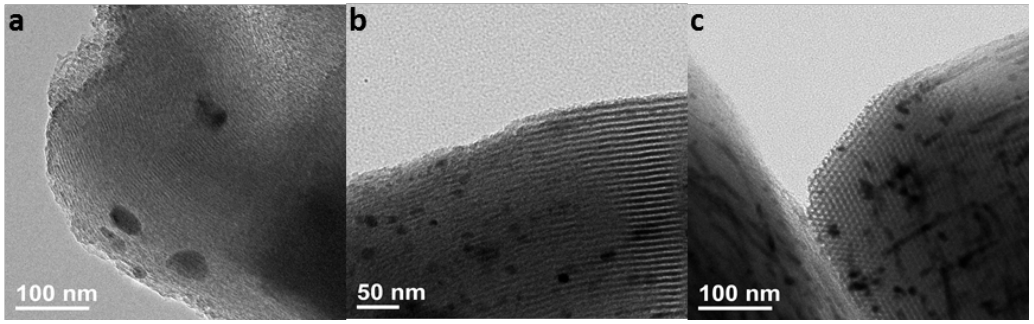
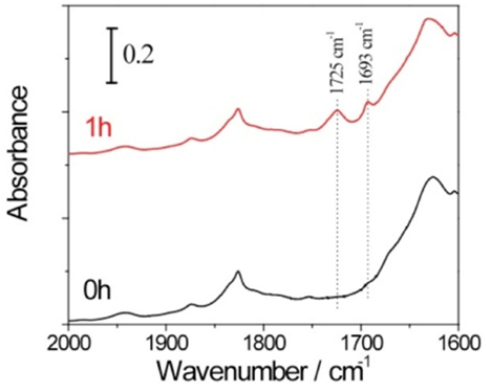
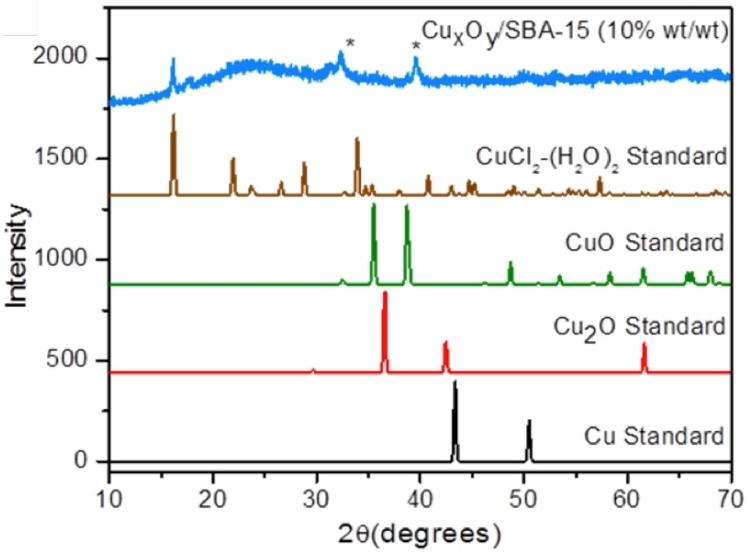
Reduction in greenhouse CO_2 emissions from fossil fuel utilization is a critical issue for our society and will soon become a major challenge of chemical industry. Converting the CO_2 produced from refineries and petrochemical plants to liquid fuels through artificial photosynthesis is an ideal solution, but imposes major technological challenges.



TEM images Cu_xO_y/SBA-15 catalyst reduced at 250°C: (a) 1.0% wt, (b) 4.8% wt, and (c) 10% wt.



FTIR spectra for photocatalytic CO_2 reduction using CuO_x/ SBA-15 as the catalyst



PXRD patterns for 10% wt Cu catalyst before H_2 reduction

Photocatalytic CO_2 reduction has been confirmed by FTIR studies.