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Developing the glycerol carbonylation process using photocatalysis and 2-cyanopyridine as a water-reducing agent

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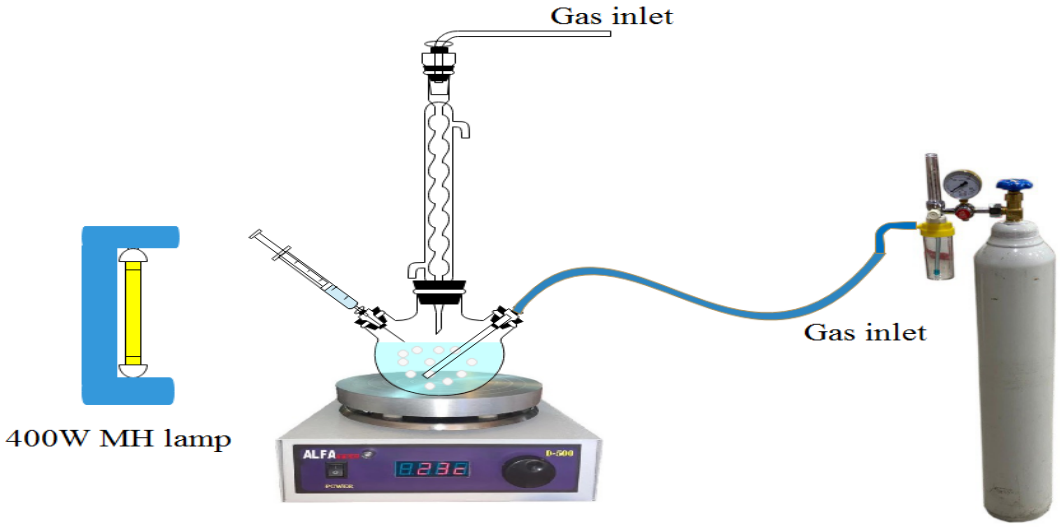
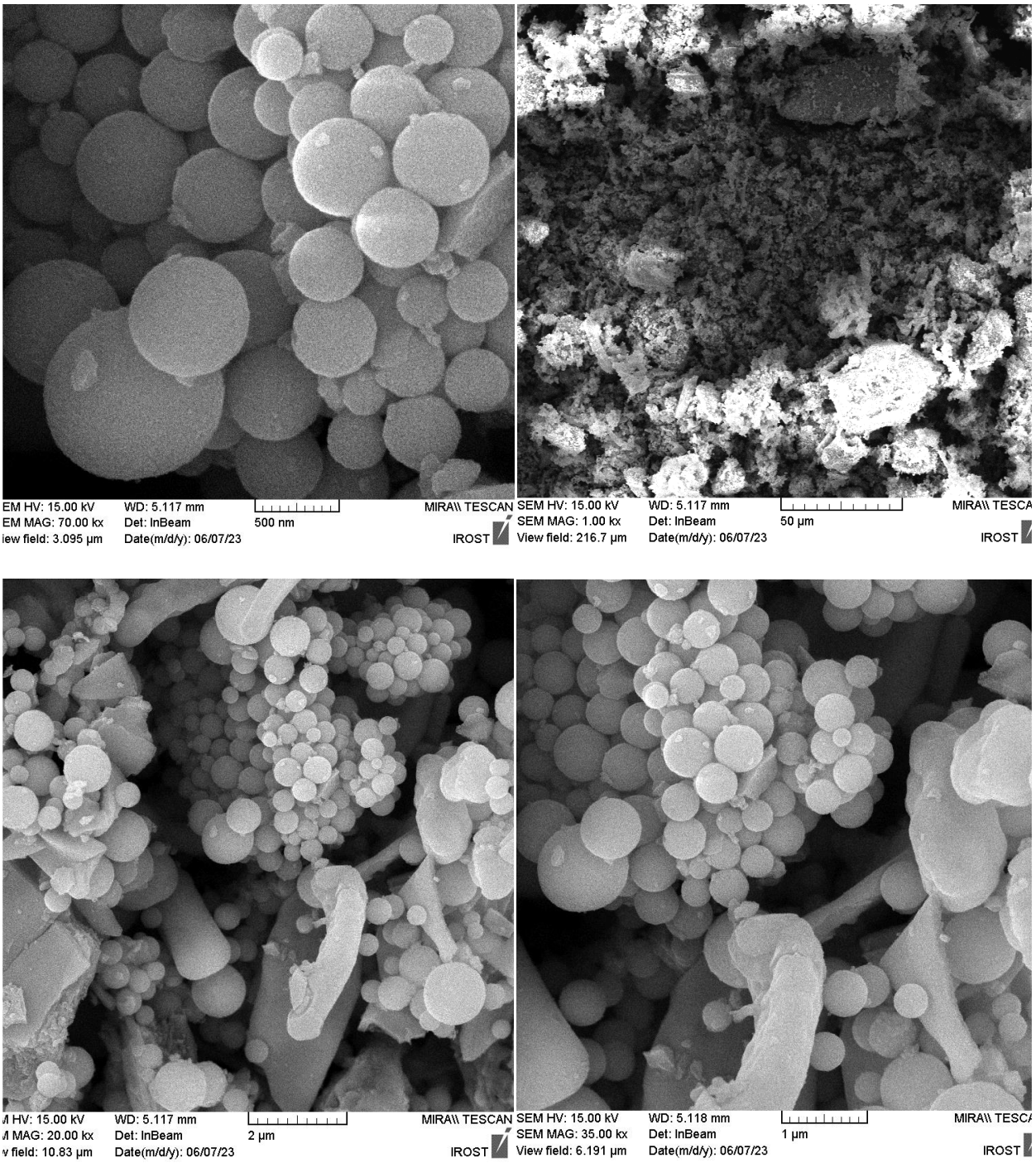
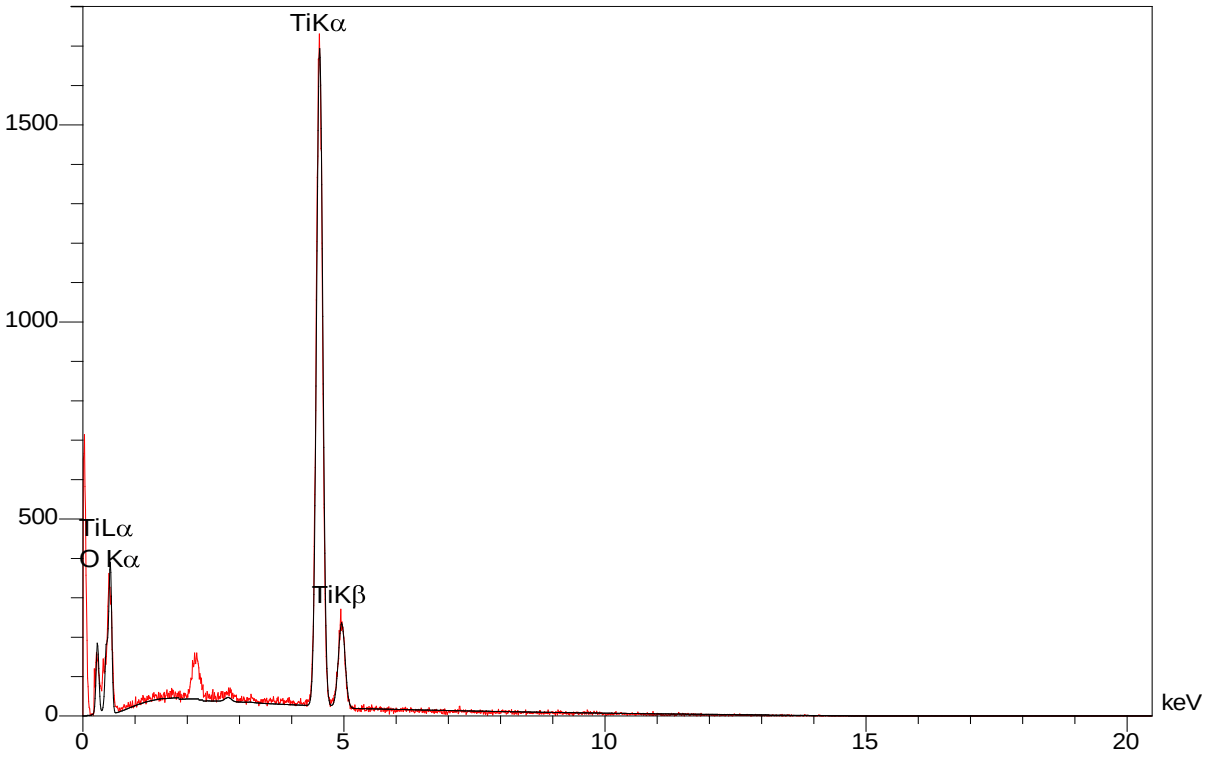


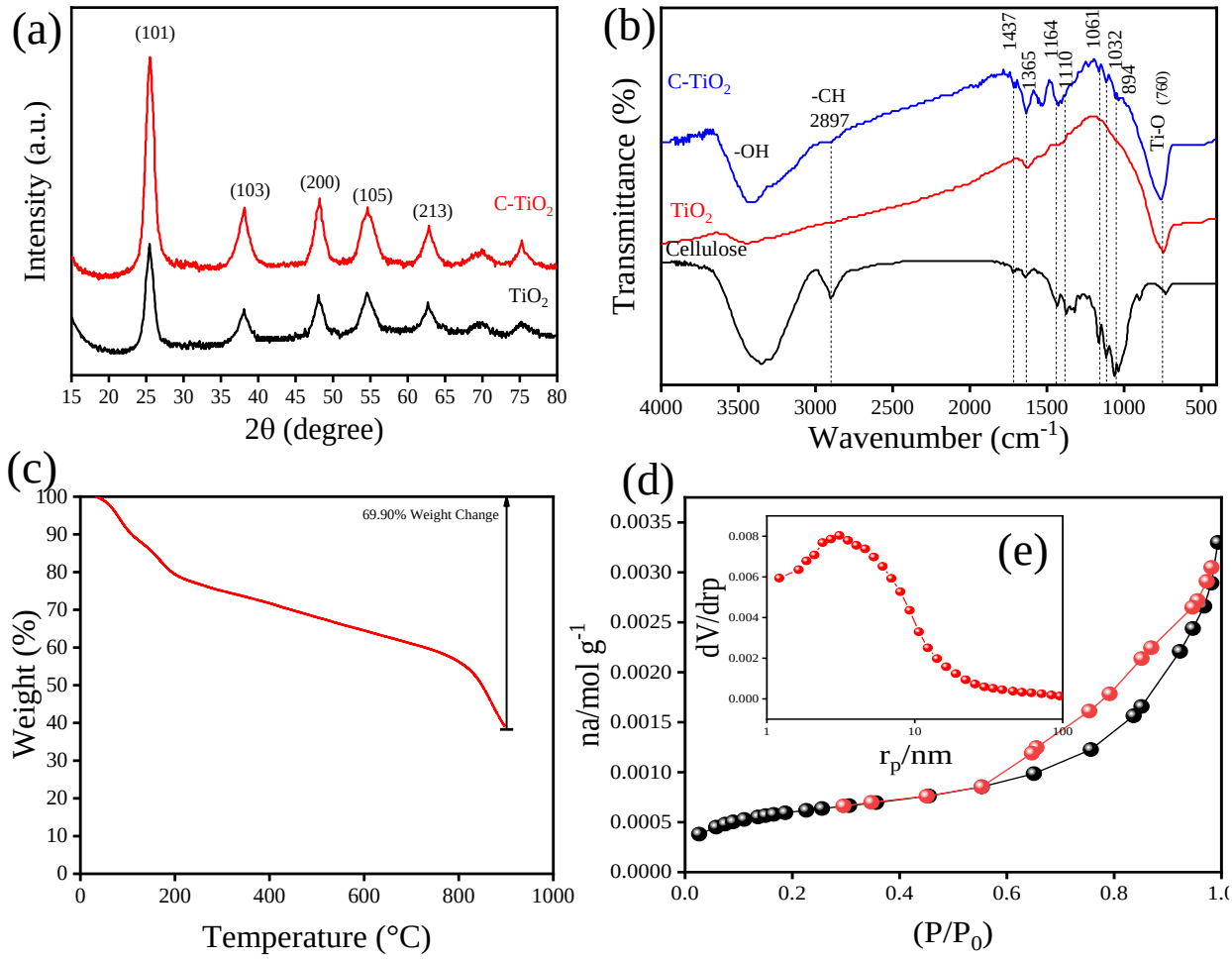
SM. 1. Schematic diagram illustrating the photocatalytic apparatus for glycerol conversion and the yield of $GlyCO_3$.



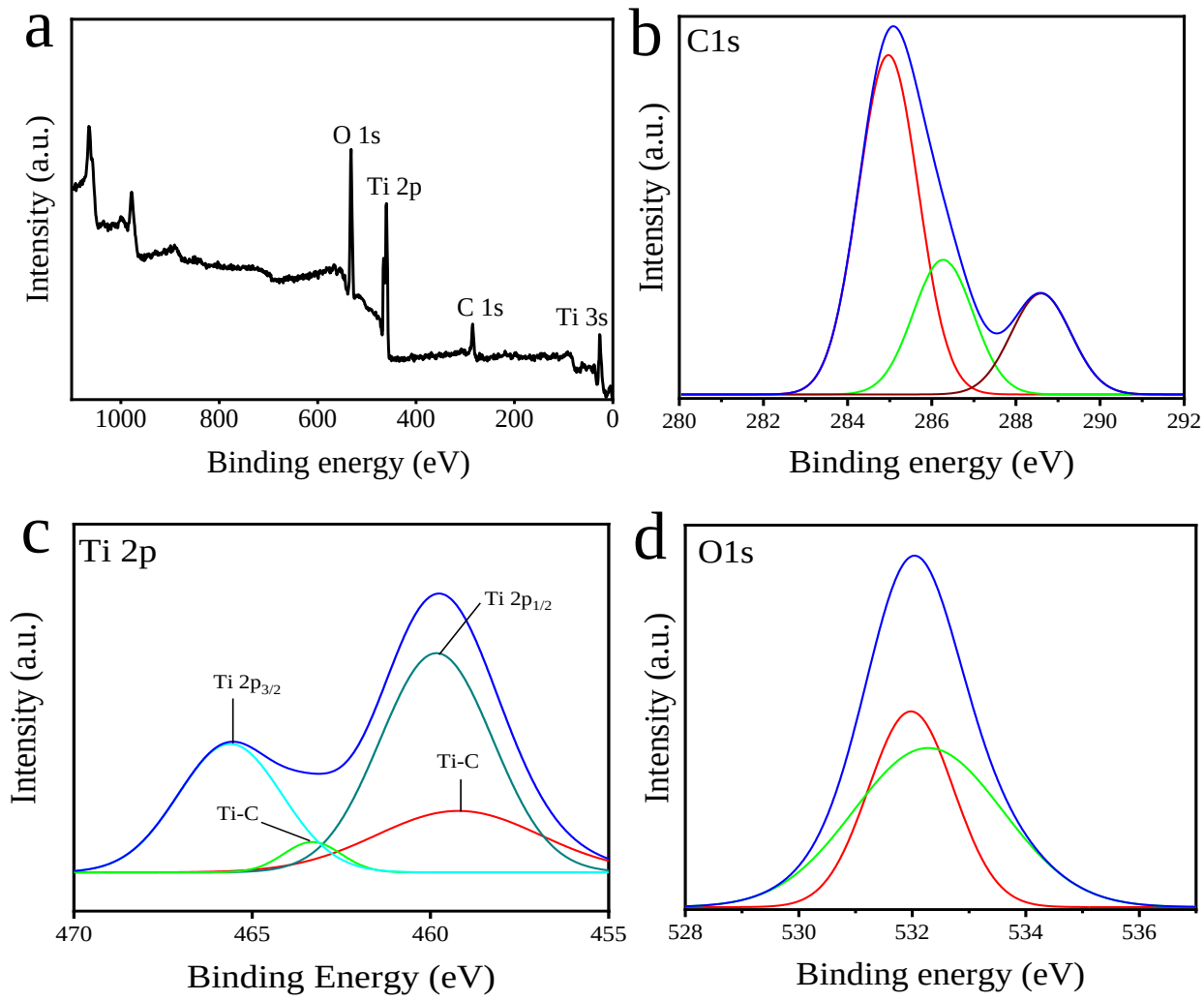
SM. 2. SEM images of cellulose-TiO_2 samples.



SM. 3. EDX spectra with elemental analysis of cellulose-TiO_2 catalysts



SM. 4. (a)X-ray diffraction patterns, (b) FTIR spectra, (c) TGA curves and (d and e) N_2 adsorption−desorption isotherms of cellulose-TiO_2 catalysts.



SM. 5. XPS spectra of cellulose-TiO_2; (a) survey spectra, (b) high-resolution XPS spectra of C1s, (c) high-resolution XPS spectra of Ti2p, and (d) high-resolution XPS spectra of O1s.