Electronic Supplementary Material (ESI) for Catalysis Science & Technology.

SUPPLEMENTARY INFORMATION

Valorisation of xylose to lactic acid on morphology-controlled ZnO catalysts

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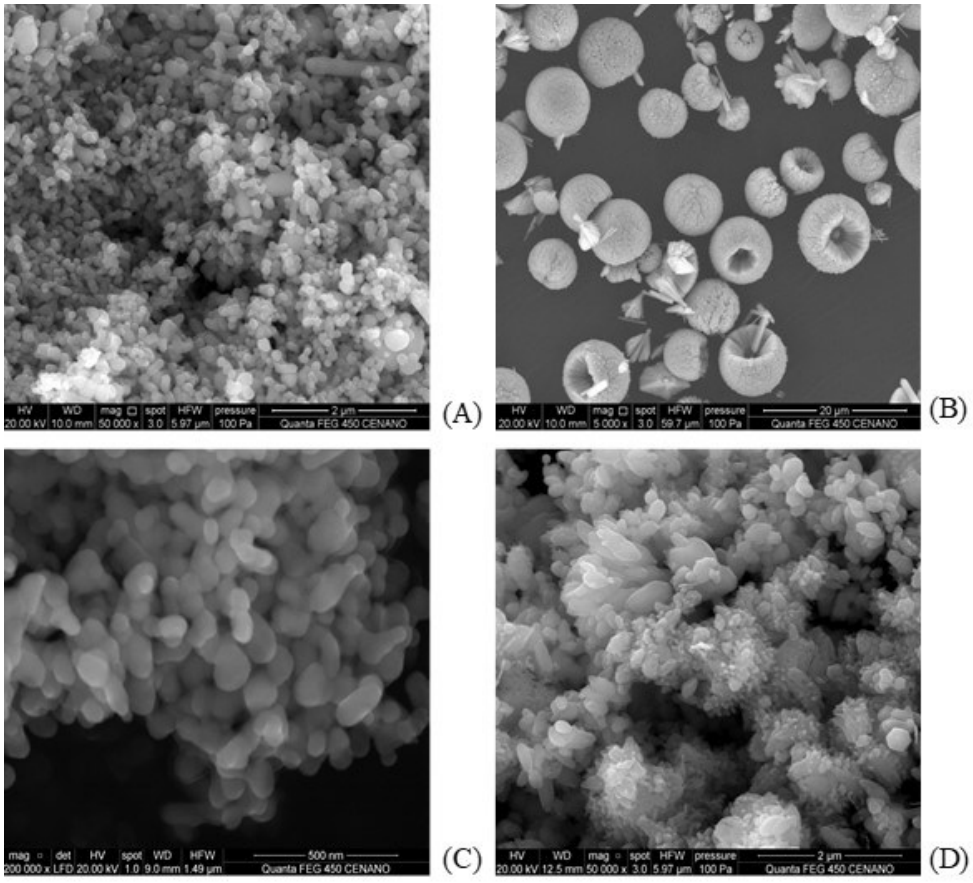

Fig. S1. Representative FE-SEM images of (A) ZnO-P, (B) ZnO-D, (C) ZnO-NP and (D) ZnO-R after thermal treatment at 500 °C.

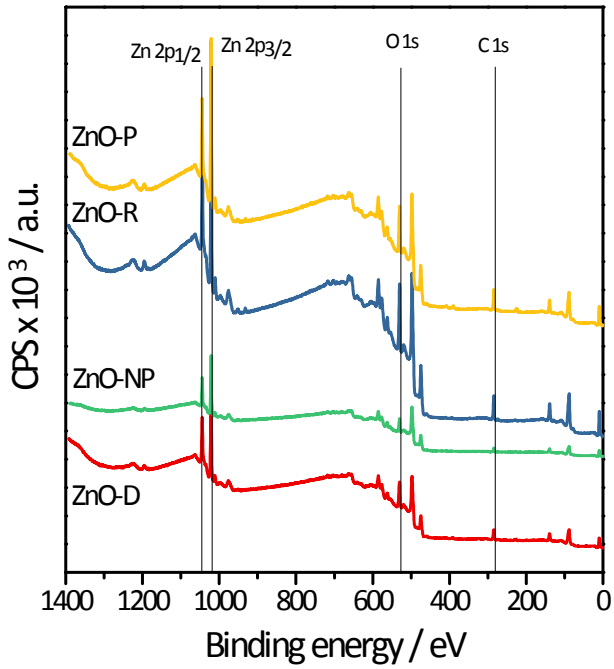

Fig. S2. Wide scan surveys XP spectra for all synthesized ZnO catalysts.

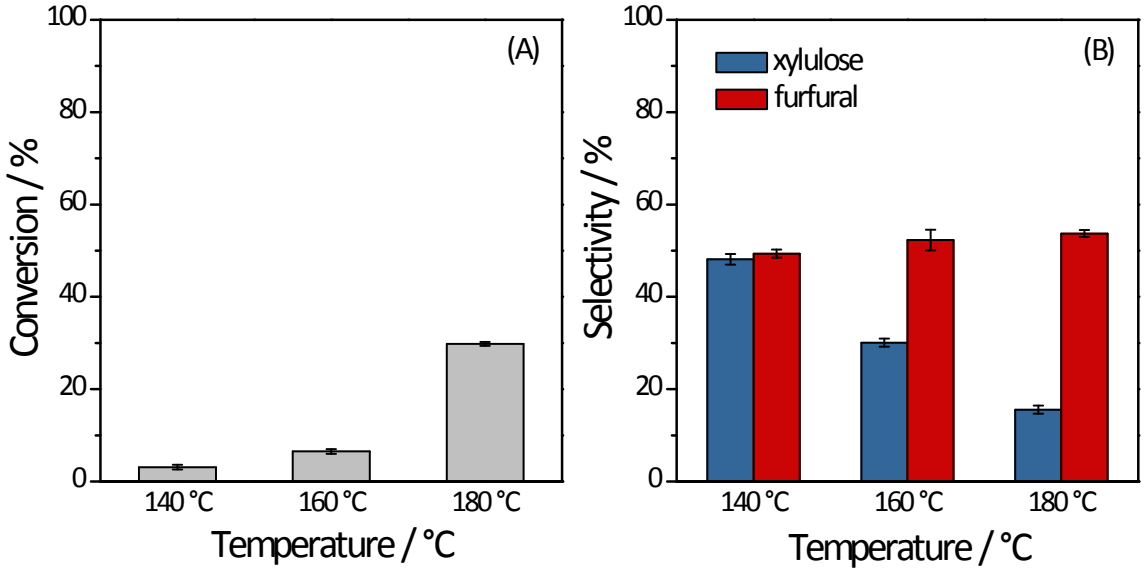

Fig. S3. Xylose conversion (A) and selectivity to xylulose and furfural (B) at different reaction temperatures in the absence of any catalyst (homogeneous thermal conversion).

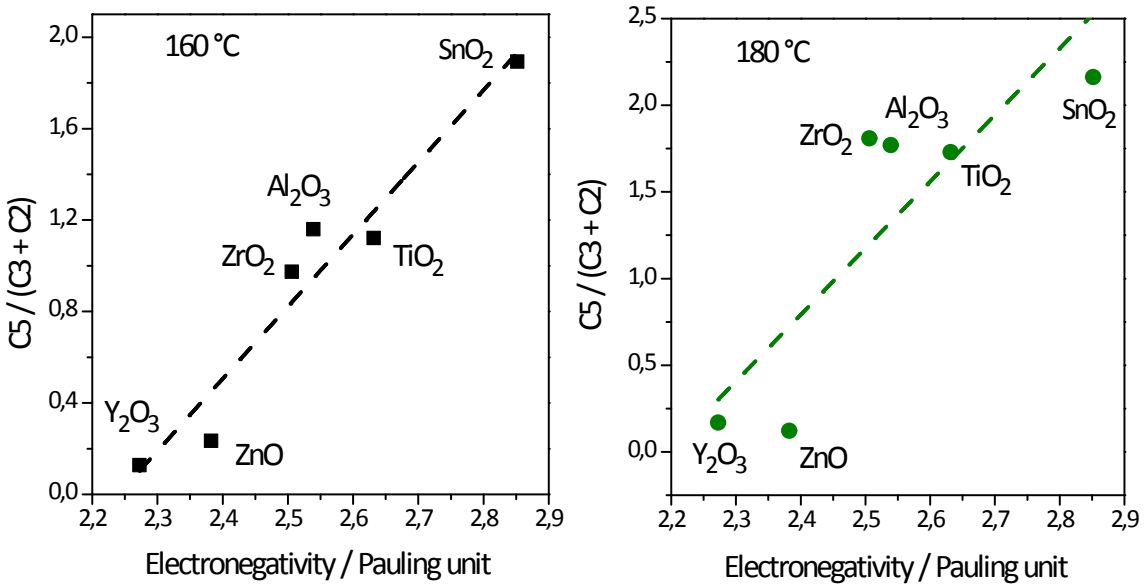

Fig. S4. Correlation between C5/C3+C2 products and electronegativity of oxide catalysts at 160 and 180 °C.

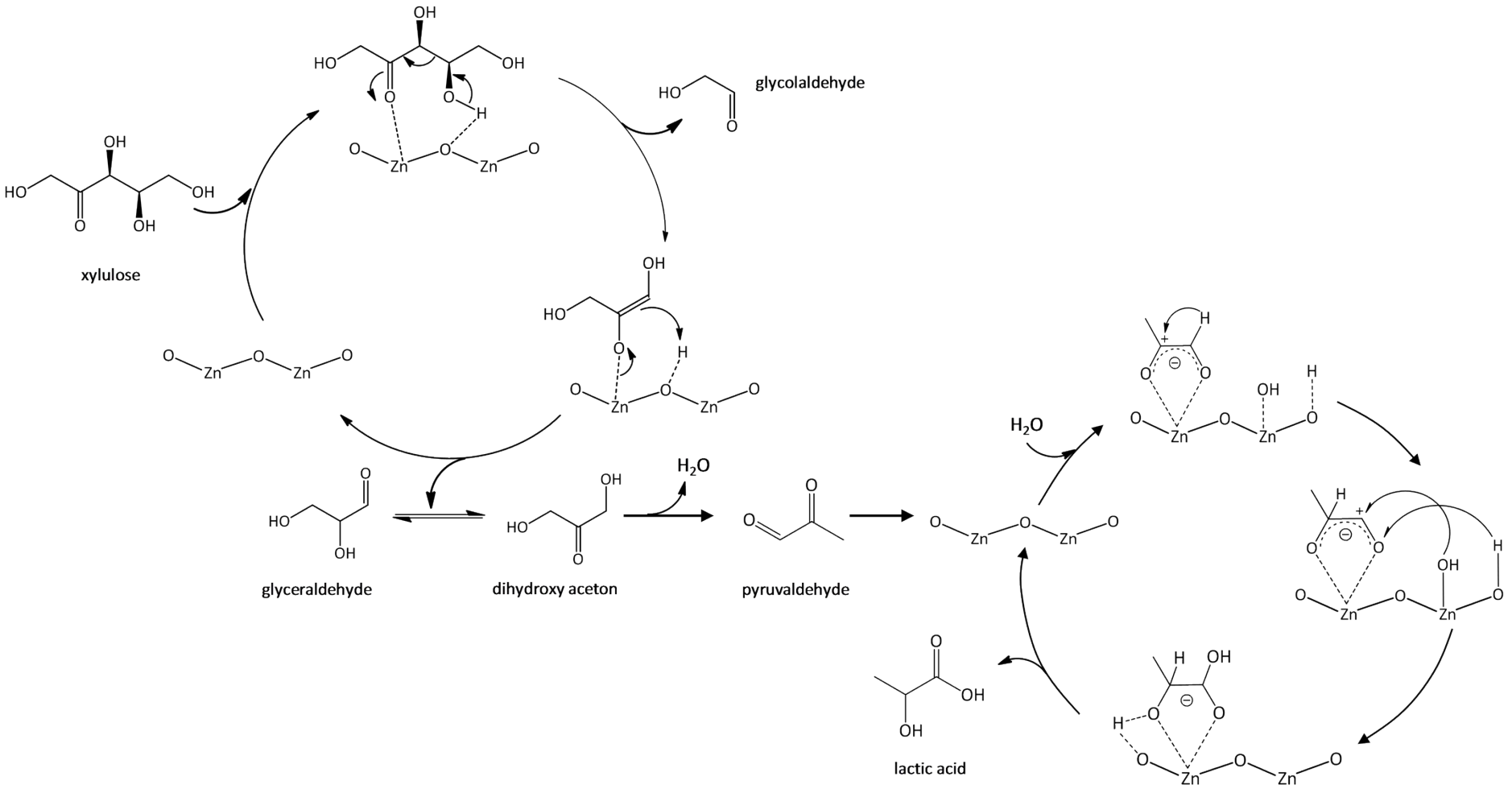

Fig. S5. Reaction mechanism taking into consideration the ketopentose isomer (xylulose).

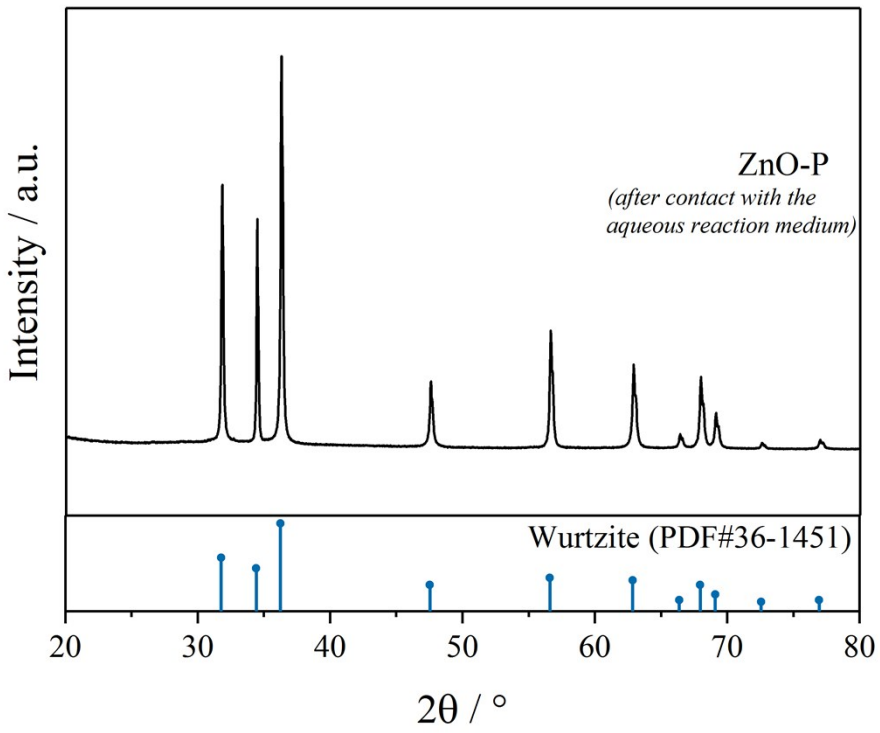

Fig. S6. Diffraction pattern of ZnO-P catalyst after contact with the aqueous reaction medium.

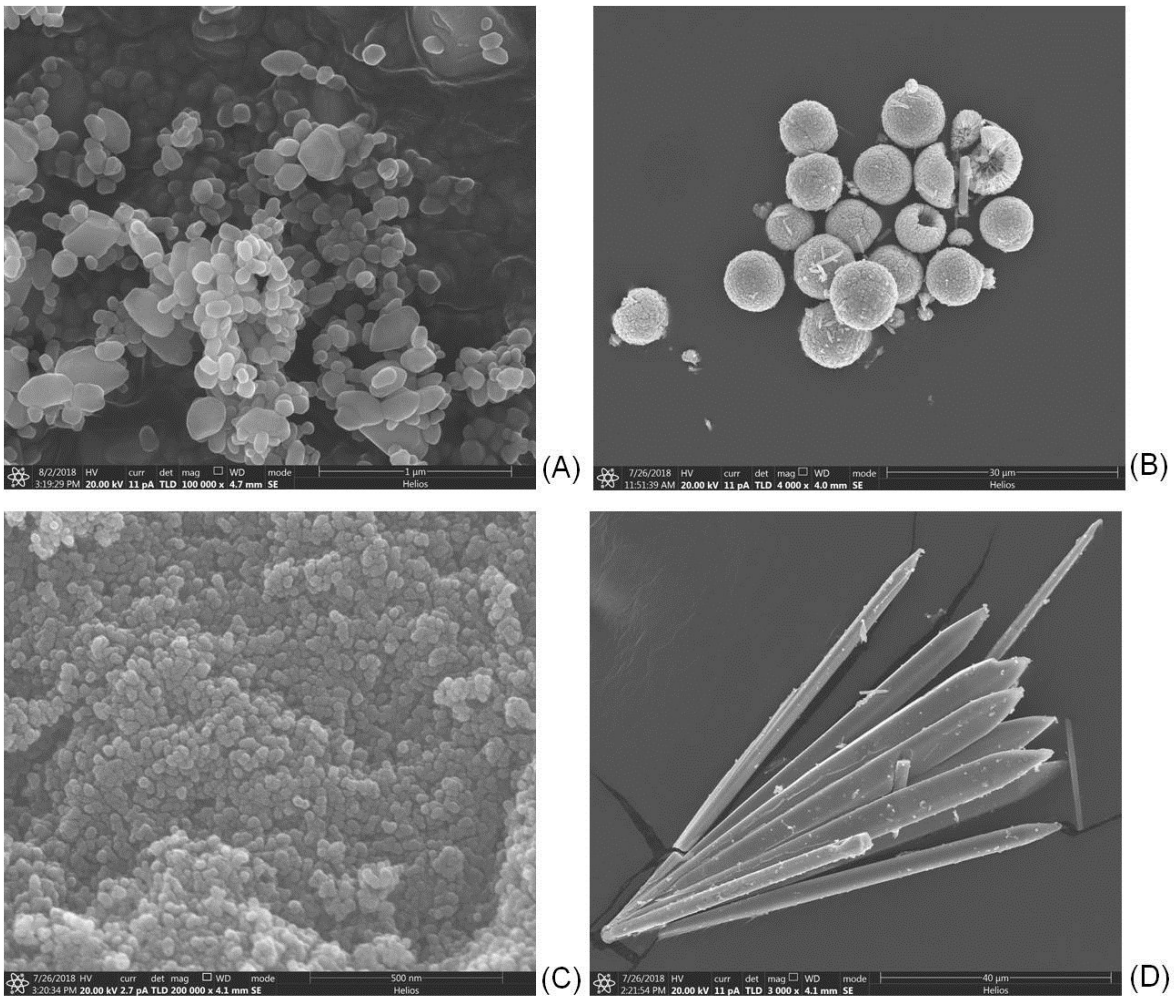

Fig. S7. Representative FE-SEM images of (A) ZnO-P, (B) ZnO-D, (C) ZnO-NP and (D) ZnO-R after xylose conversion at 180 °C and regeneration (coke burn-off) at 500 °C.