Supporting Information

Boosting energy efficiency and selectivity of glucose oxidation to glucuronic acid in high frequency ultrasound using multicavity CuO catalytic cavitation agents

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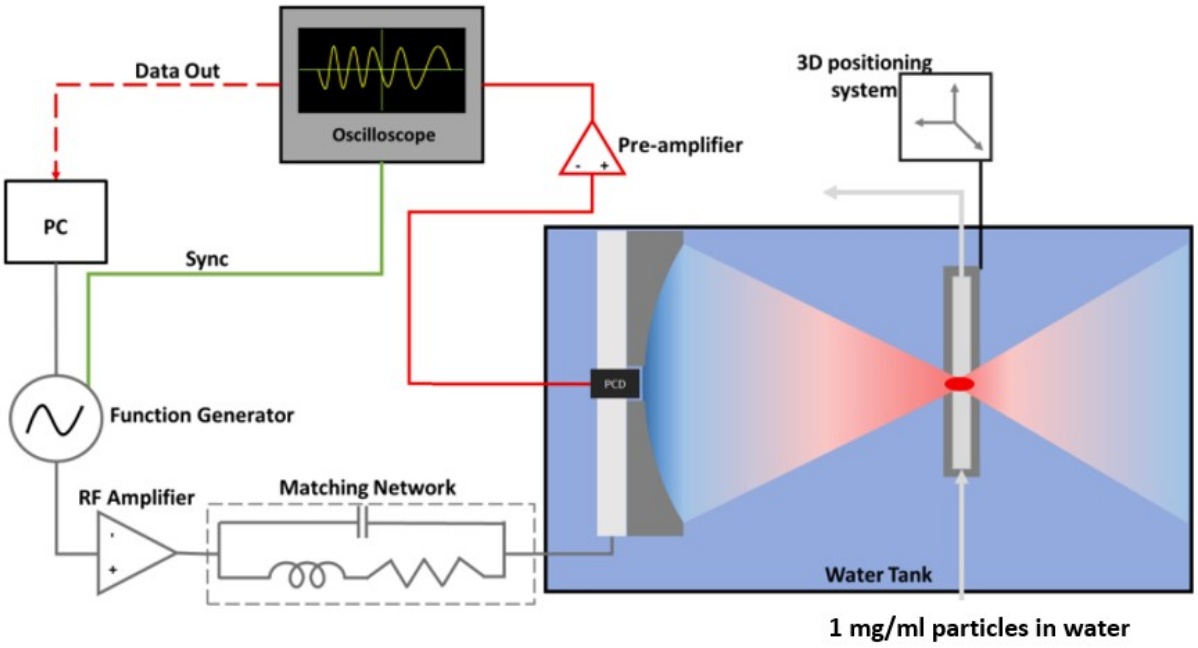

Figure S1. Schematic illustration of HIFU setup with flow chamber for acoustic response quantification.

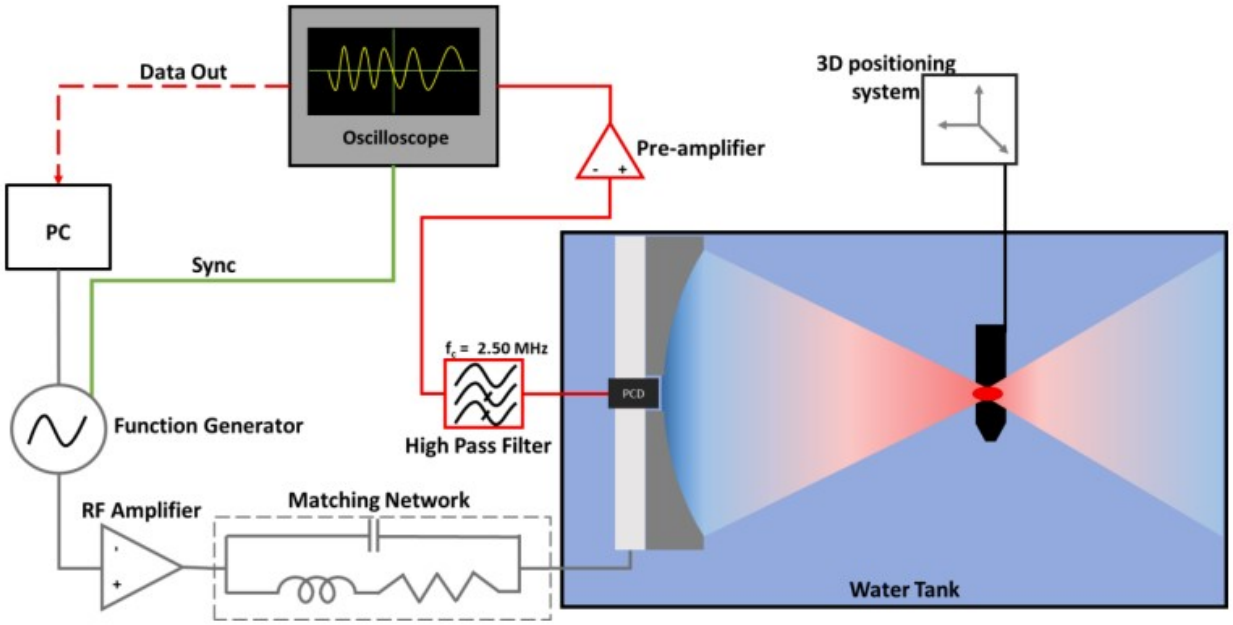

Figure S2. Schematic illustration of sonochemical glucose oxidation experimental setup.

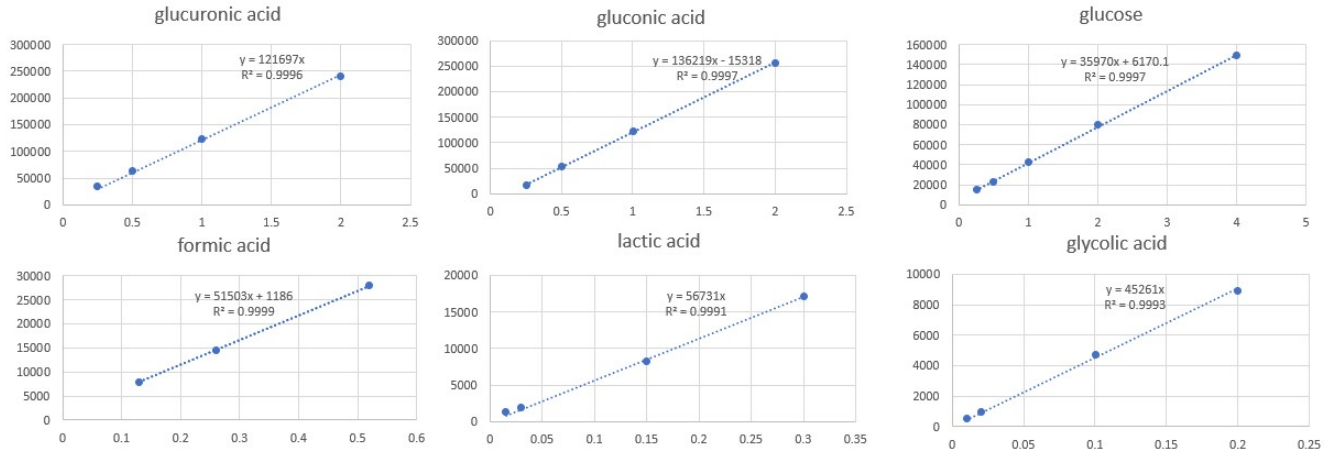

Figure S3. Standard curves of products and reactant.

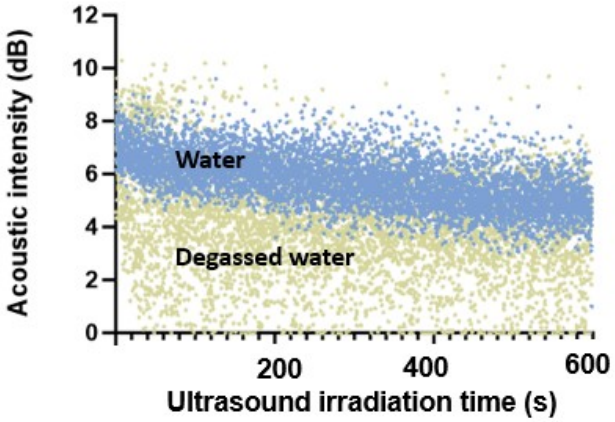

Figure. S4 Broadband signal intensity under 4.23 MPa of degassed water compared to water.

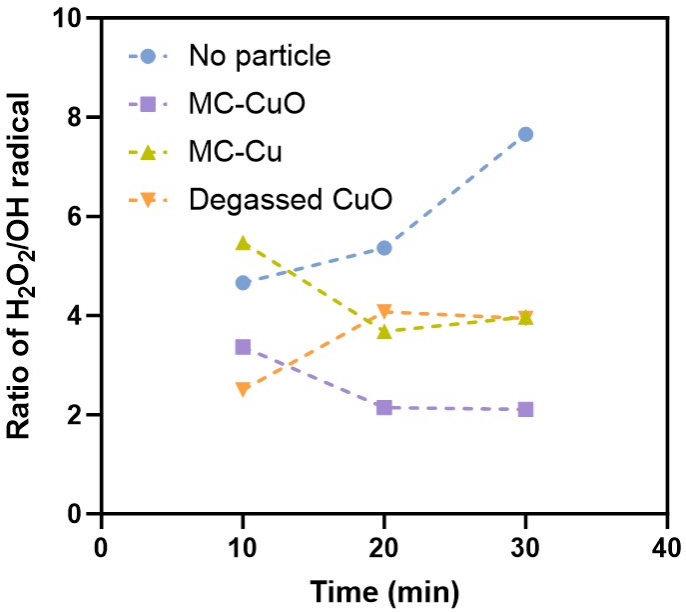

Figure S5. Ratio of H_2O_2 and OH radical among different groups.

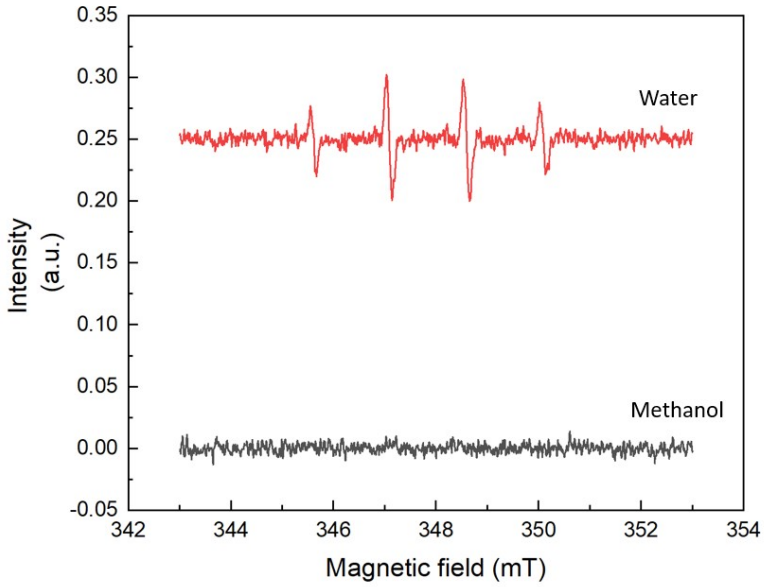

Figure S6. EPR signal under silent condition with H2O2 and DMPO in water and methanol.

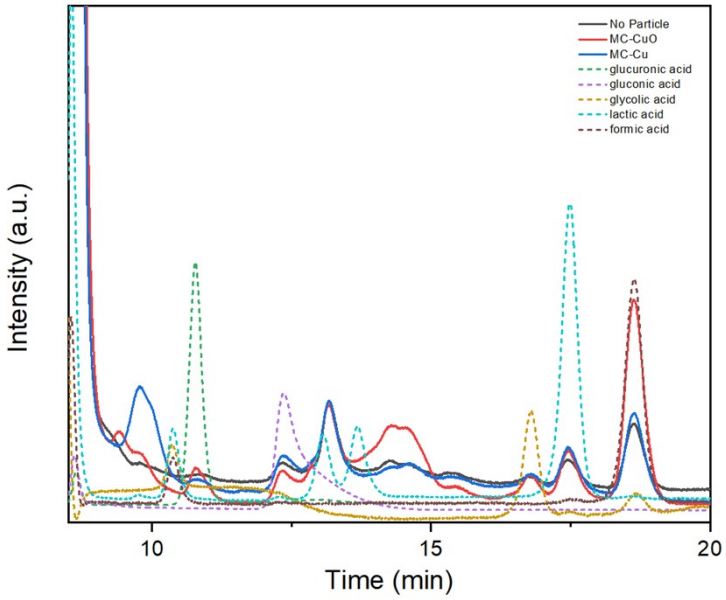

Figure S7. HPLC spectrum of products and product standards (standard lactic acid has two unknown peaks which can be due to polymerization).

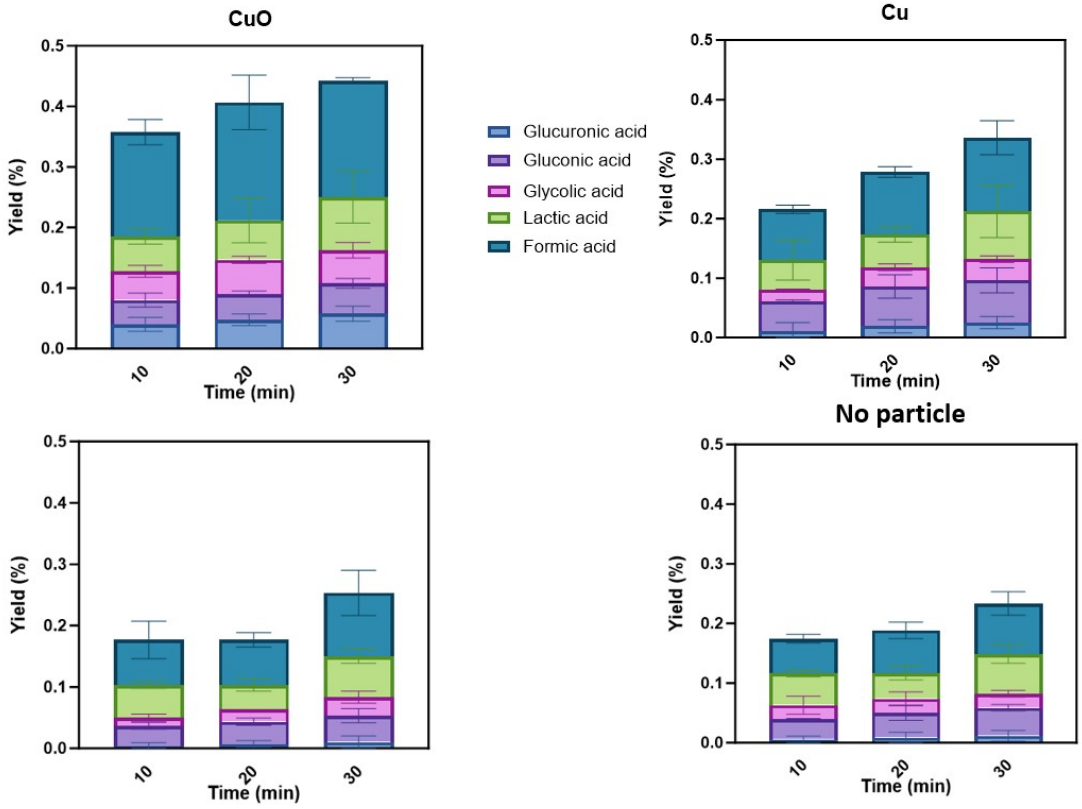

Figure S8. Fraction of products produced in different groups.

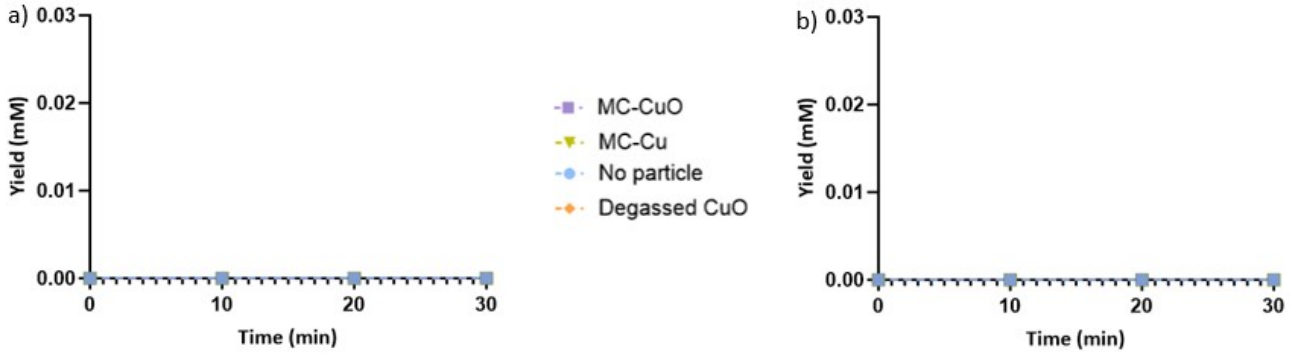

Figure S9. Sonoactivity of sonocatalysts under silent condition without ultrasound irradiation. The yield of glucuronic acid a), and yield of gluconic acid b).

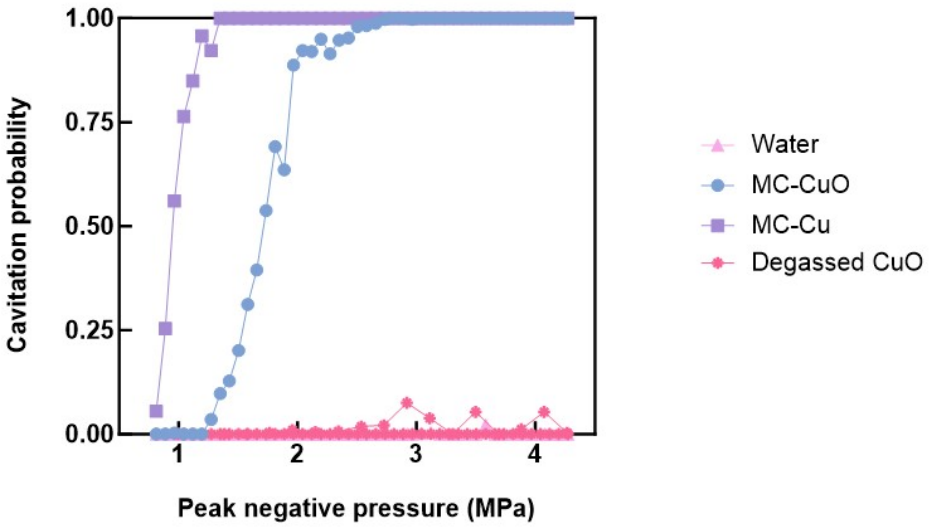

Figure. S10 Acoustic properties of MC-CuO. a) Cavitation probability of the series of MC-CuO under acoustic pressure ramp.

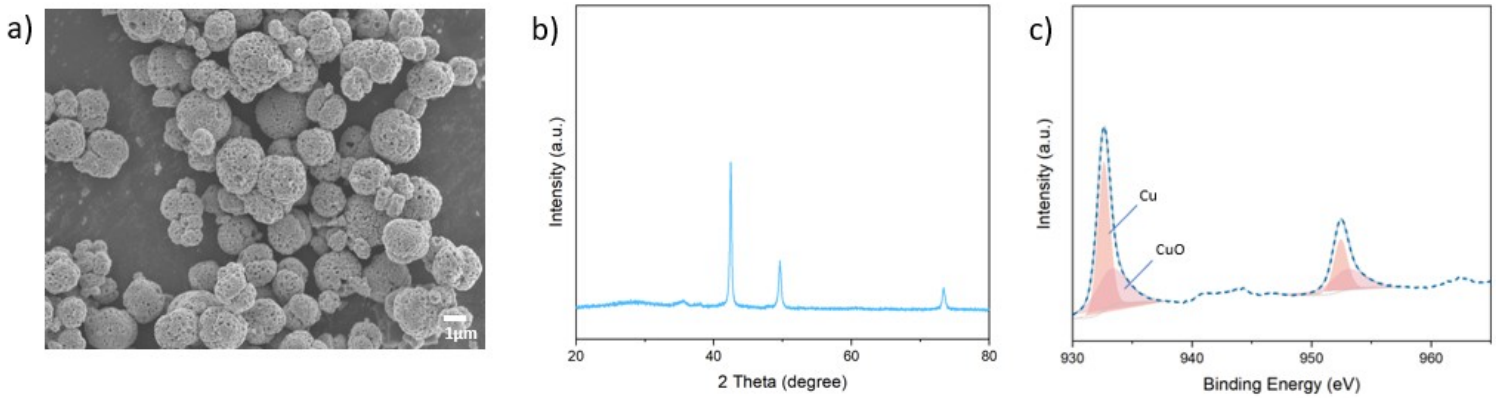

Figure S11. Morphological and crystal characterization of MC-Cu particles. SEM images of a) MC-Cu, b) XRD spectrum of the MC-Cu particles with reference spectrum, c) XPS spectrum of the MC-Cu particles.

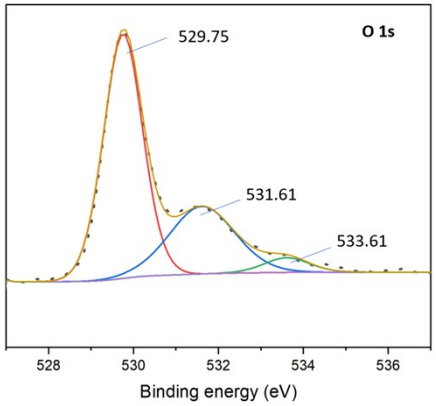

Figure S12. O 1s XPS spectrum of the as-prepared MC-CuO particle

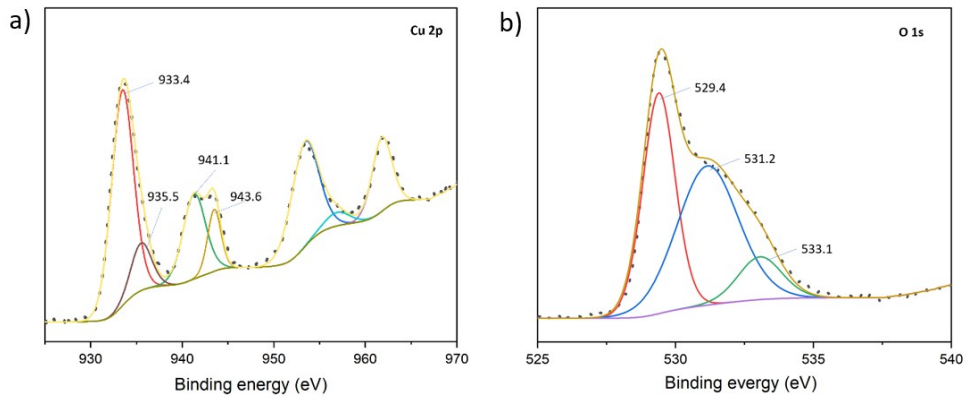

Figure S13. a) Cu 2p XPS of used MC-CuO; b) O 1s XPS of used MC-CuO.