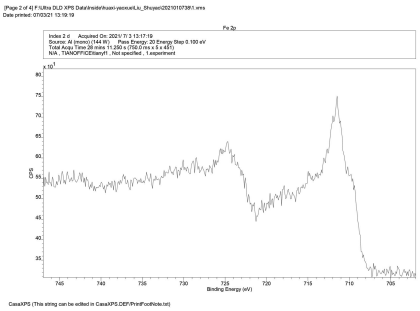
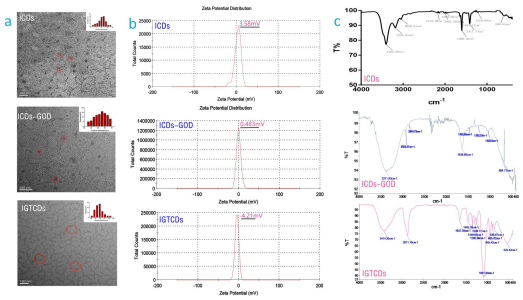
Supplementary Information

1. The peak of Fe 2p divided *(S.1)* showed two strong absorptions at 712 and 725eV, indicating the existence of Fe^{2+} and Fe^{3+} in IGTCDs.



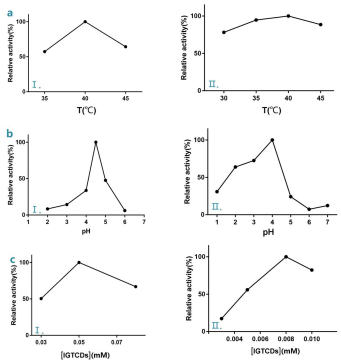
S.1 The divided peak of Fe 2p.

2.The particle size, potential and infrared characterization of ICDs，ICDs-GOD and IGTCDs.



S.2 The particle size(a), potential(b) and infrared characterization(c) of ICDs，ICDs-GOD and IGTCDs.

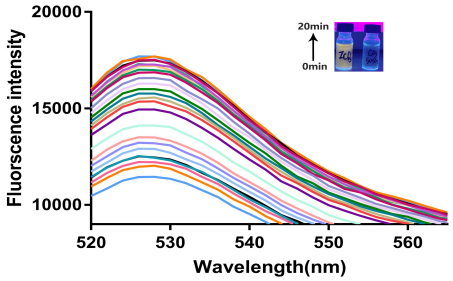
3.The optimum conditions for enzymatic reaction of IGTCDs were screened (S.3). The detection of H_2O_2 were under 40 ℃,pH 4.5 with 0.05mM IGTCDs while β-D-glucose were under 40℃, pH 4.0 with 0.008mM IGTCDs.



S.3 The optimum conditions screening for enzymatic reaction of the catalysis of glucose and H_2O_2 by IGTCDs.

4.The generation of other ROS species like peroxy radicals during the catalysis was

tested by SOSG.3ml HAC-NaAC buffer (pH=4.00), 500 μl 1mM IGTCDs and 250μl 5mM H_2O_2 were added into the 5ml EP tube, and 50μL 0.5mM SOSG solution was added after incubation, then recorded the changing process of the fluorescence spectrum at Ex=504nm immediately. As shown in figure, the fluorescence intensity at Em=525nm increased gradually and leveled off till 20 minutes, and the embedded picture showing the orange(CDs) and green(SOSG) fluorescence before and after the reaction under ultraviolet, explaining the generation of $^1O_2$.Carbon dots, as a sp^2 material with π = π conjugated system and the special physicochemical structure endowing it with good electronic transmission ability, could be served as electron acceptor or donor at the same time, accelerating the speed of electron transfer and improving the catalytic activity.



S.4 The fluorescence changing of SOSG at Ex/Em=504/525nm in 20 minutes triggered by the $^1O_2$ catalyzed by IGTCDs.