

# Green Nanocomposite: Fabrication, Characterization, and Photocatalytic Application of Vitamin C Adduct Conjugated ZnO Nanoparticles

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## Electronic Supplementary Information (ESI)

### Measurement Results

14010312-Ebrahimi-5D-A-Zeta\_03.nzt

#### Measurement Results

Date : Thursday, June 02, 2022 8:05:48 PM  
Measurement Type : Zeta Potential  
Sample Name : 14010312-Ebrahimi-5D-A-Zeta  
Temperature of the Holder : 25.0 °C  
Dispersion Medium Viscosity : 0.894 mPa·s  
Conductivity : 0.072 mS/cm  
Electrode Voltage : 3.9 V

#### Calculation Results

Peak No.	Zeta Potential	Electrophoretic Mobility
1	-22.9 mV	-0.000177 cm <sup>2</sup> /Vs
2	-- mV	-- cm <sup>2</sup> /Vs
3	-- mV	-- cm <sup>2</sup> /Vs

Zeta Potential (Mean) : -22.9 mV  
Electrophoretic Mobility Mean : -0.000177 cm<sup>2</sup>/Vs

### Measurement Results

14010312-Ebrahimi-5D-B-Zeta\_02.nzt

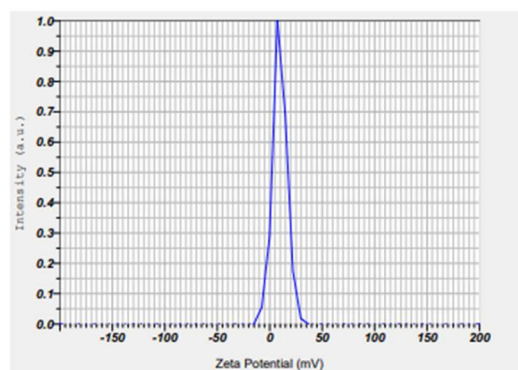
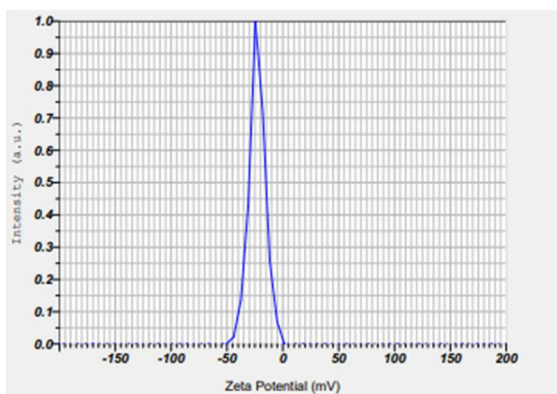
#### Measurement Results

Date : Thursday, June 02, 2022 7:56:44 PM  
Measurement Type : Zeta Potential  
Sample Name : 14010312-Ebrahimi-5D-B-Zeta  
Temperature of the Holder : 25.1 °C  
Dispersion Medium Viscosity : 0.893 mPa·s  
Conductivity : 0.111 mS/cm  
Electrode Voltage : 3.4 V

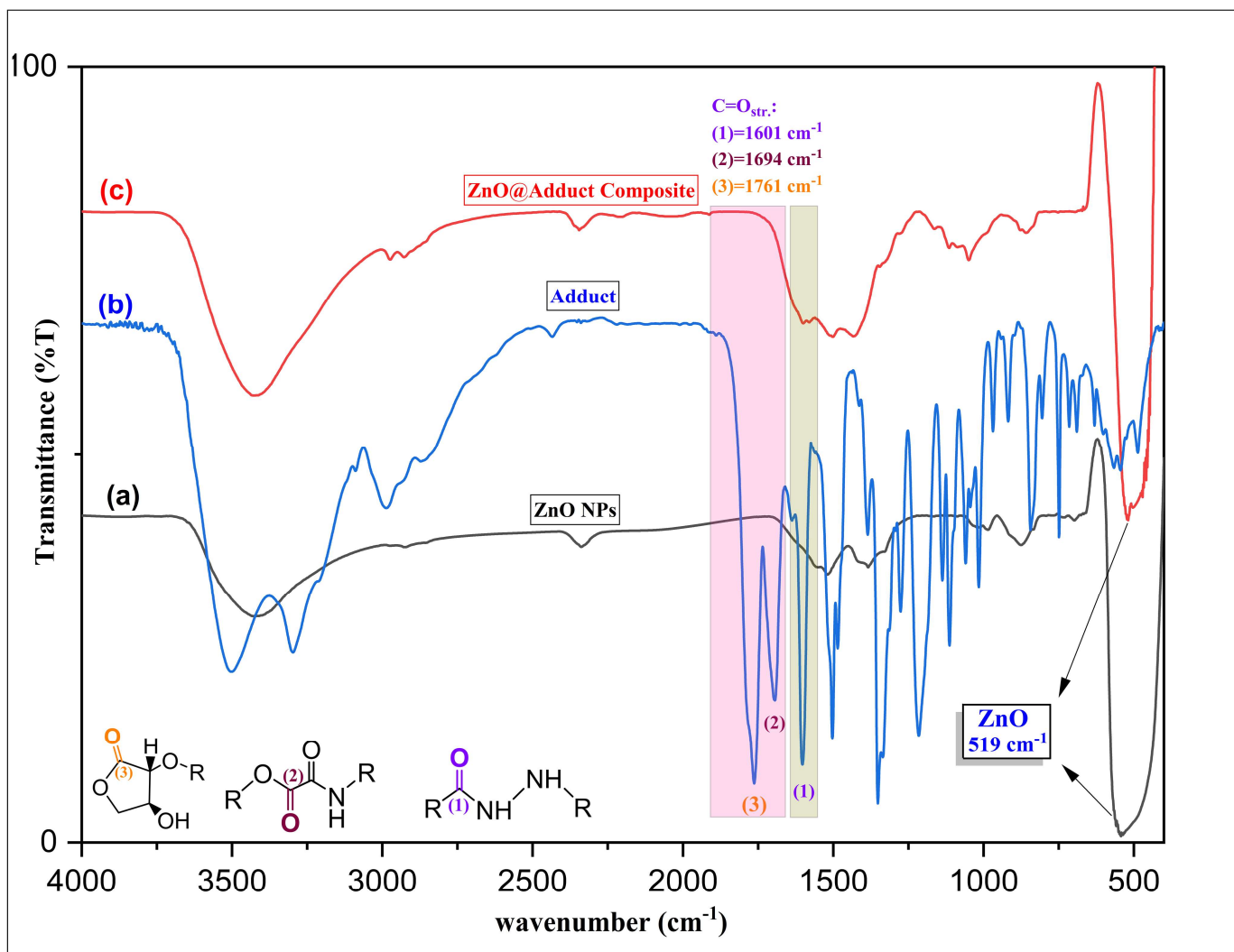
#### Calculation Results

Peak No.	Zeta Potential	Electrophoretic Mobility
1	9.7 mV	0.000075 cm <sup>2</sup> /Vs
2	-- mV	-- cm <sup>2</sup> /Vs
3	-- mV	-- cm <sup>2</sup> /Vs

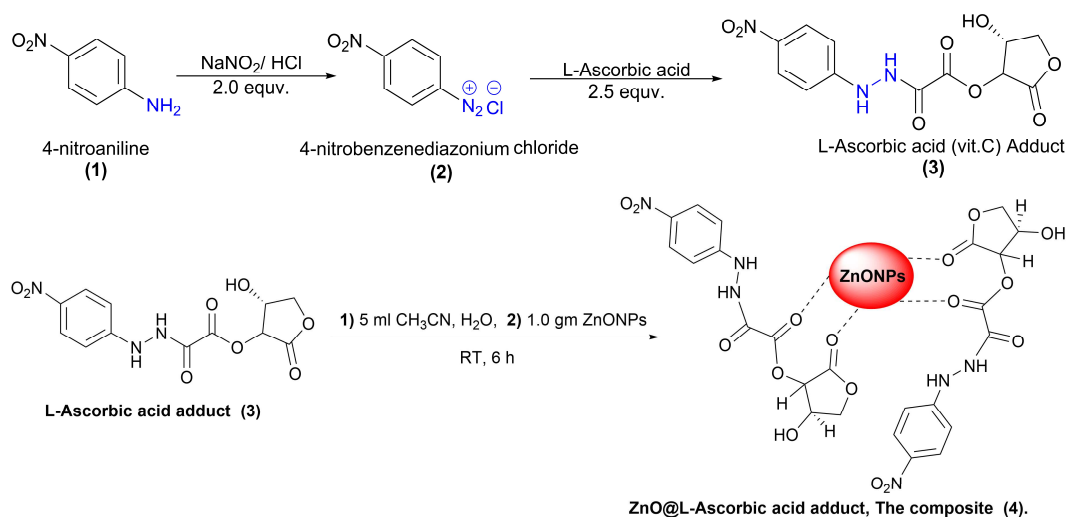
Zeta Potential (Mean) : 9.7 mV  
Electrophoretic Mobility Mean : 0.000075 cm<sup>2</sup>/Vs



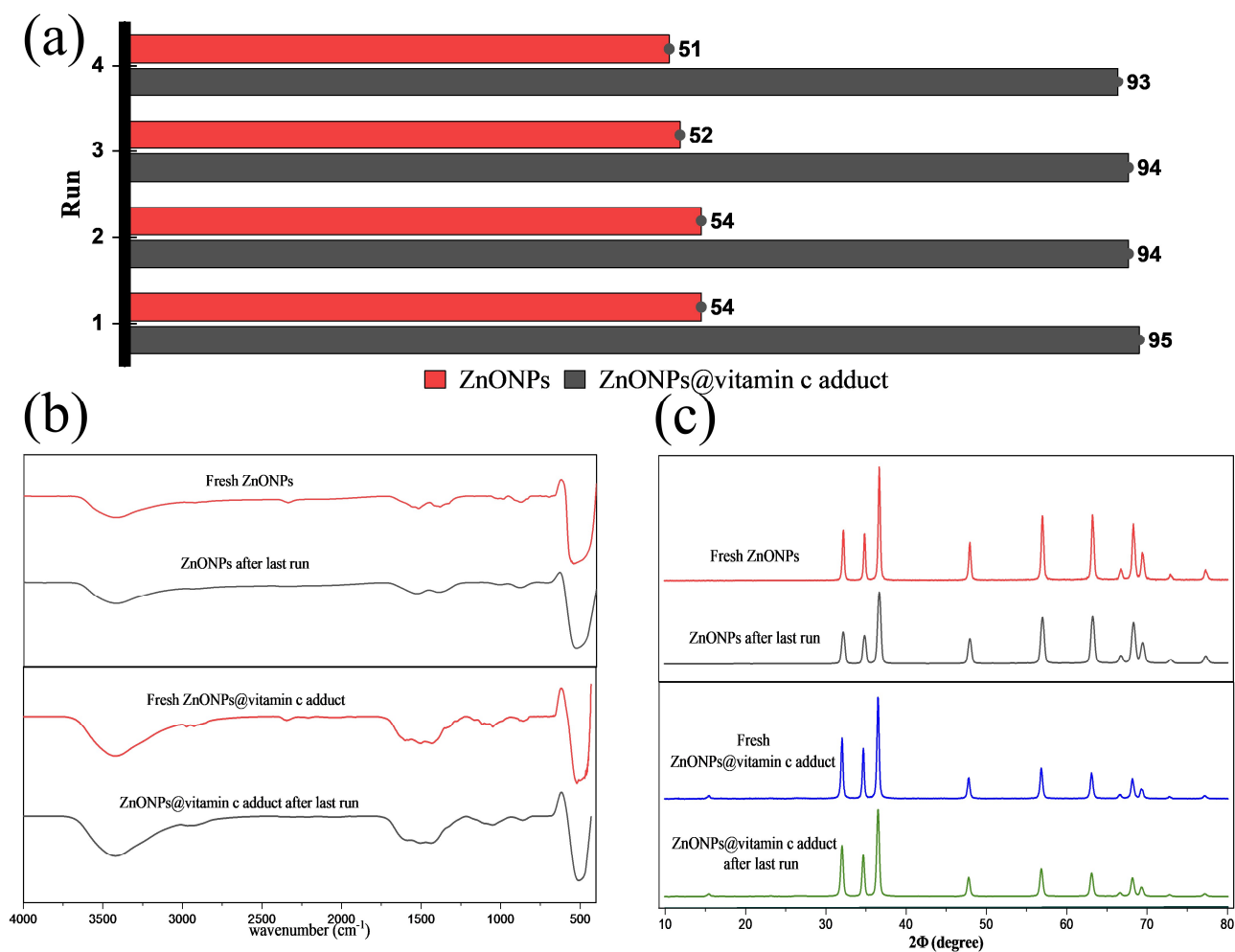
**Fig. S1** Zeta potential value (-22.9) of pure ZnO NPs (a) and zeta potential value (+9.7) of the composite (b), respectively.



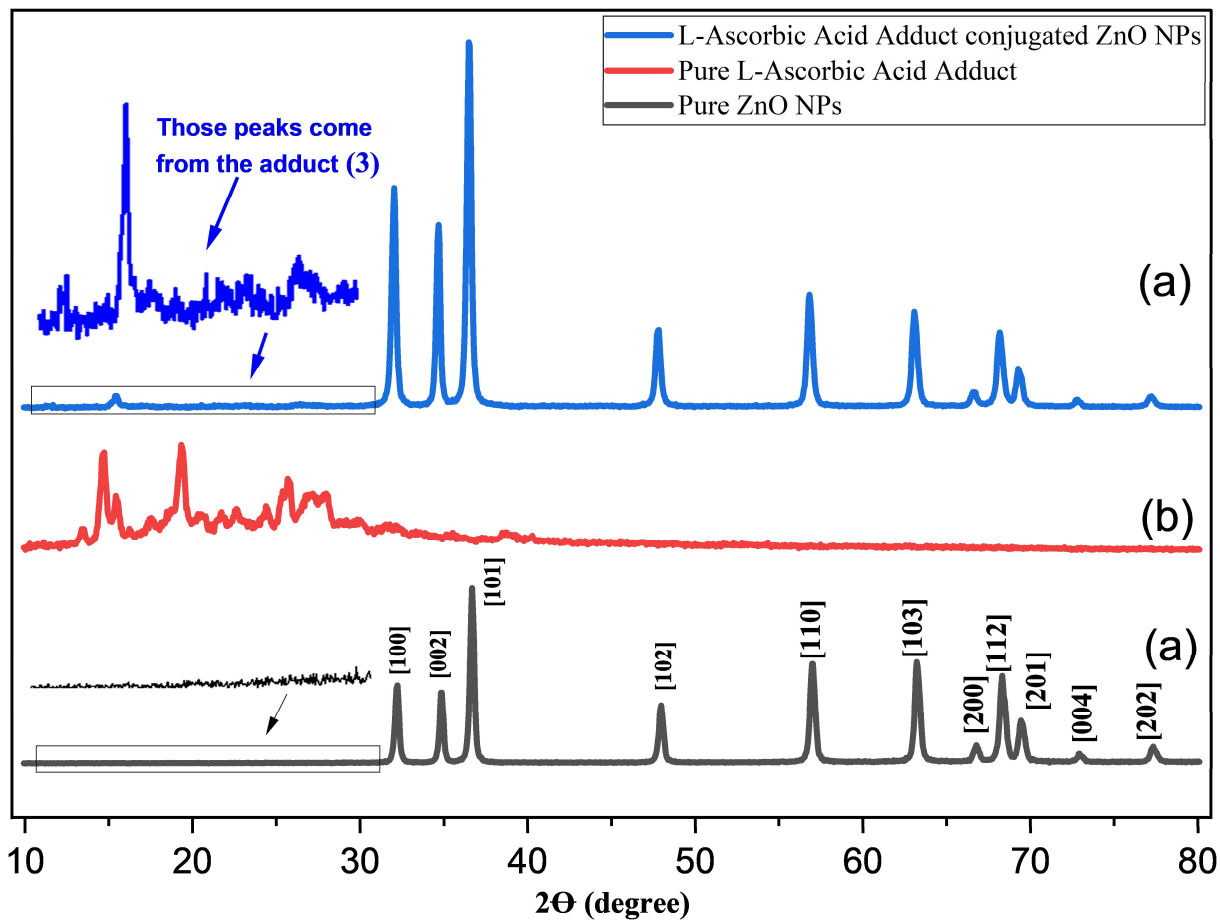
**Fig. S2** FTIR spectra of (a) ZnONPs, (b) L-ascorbic acid adduct, and (c) L-ascorbic acid adduct conjugated ZnONPs, respectively.



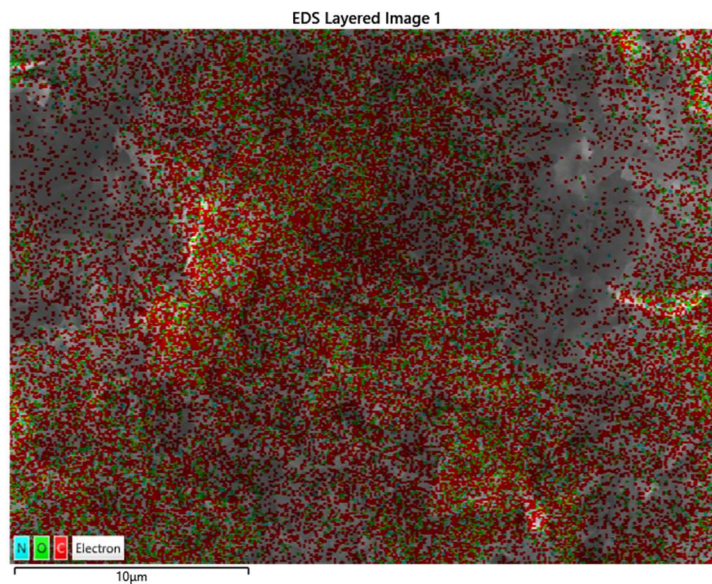
- ✓ Novel, Green & Nano composites
- ✓ Photoredox activity under visible light
- ✓ Reducing optical band gap
- ✓ Creating second optical band gap
- ✓ XRD, FT-IR, UV-Vis., DRS, FESEM, EDX, PL, Zeta Potential



**Fig. S3** Regeneration and reusability (a) Catalytic degradation performance, (b) FT-IR spectra and (c) XRD spectra of the catalysts.

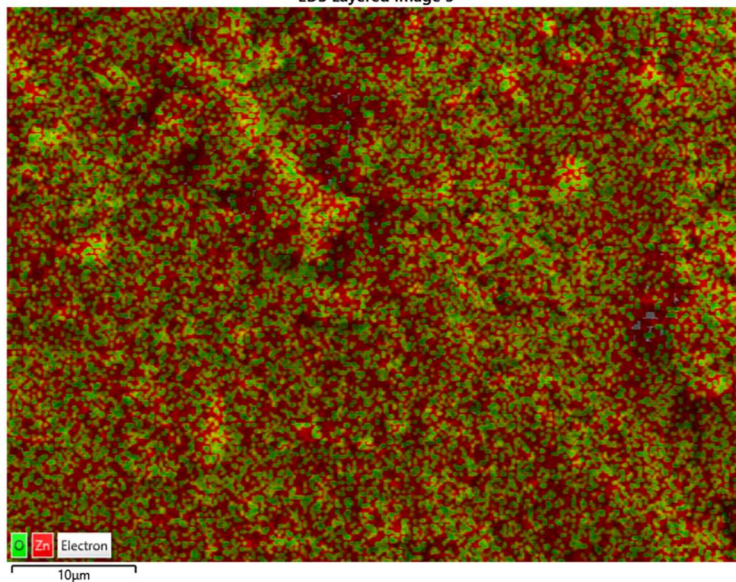


**Fig. S4** XRD spectra of (a) ZnONPs (Black), (b) L-ascorbic acid adduct (Red), and (c) L-ascorbic acid adduct conjugated ZnONPs (Blue), respectively.



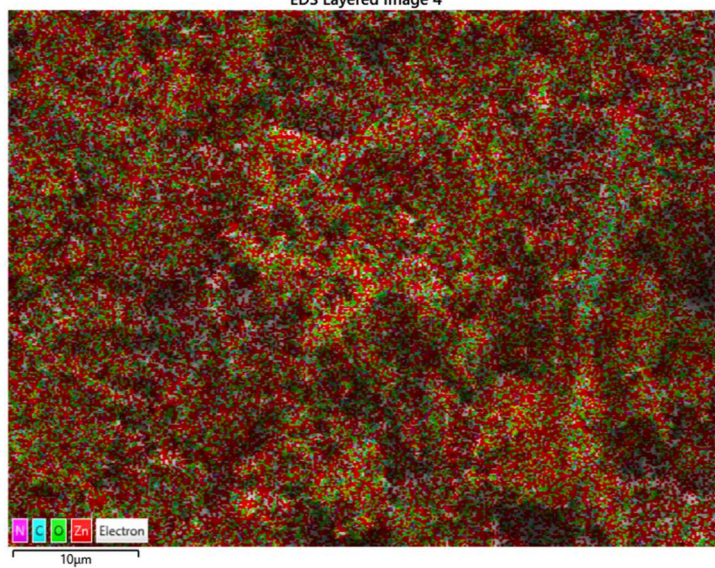
**Fig. S5** EDX layered image of compound (3)

EDS Layered Image 3

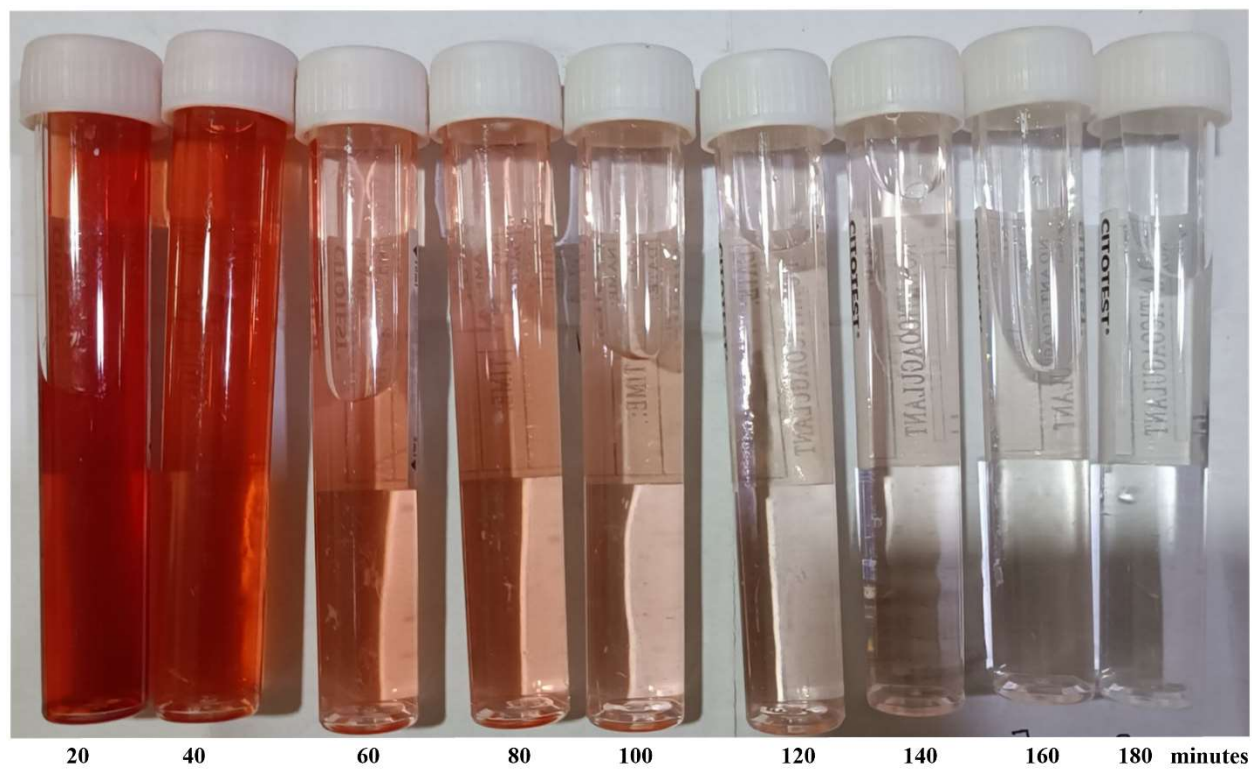


**Fig. S6** EDX layered image of pure ZnO NPs

EDS Layered Image 4



**Fig. S7** EDX layered image of compound (4)



**Fig. S8** photocatalytic degradation of Congo Red (CR)



**Fig. S9** Synthesized products