

Electronic Supplementary Information

Singular red emission from upconverting $\text{ZnGa}_2\text{O}_4:\text{Yb},\text{Er}$ nanoparticles co-doped by Cr^{3+}

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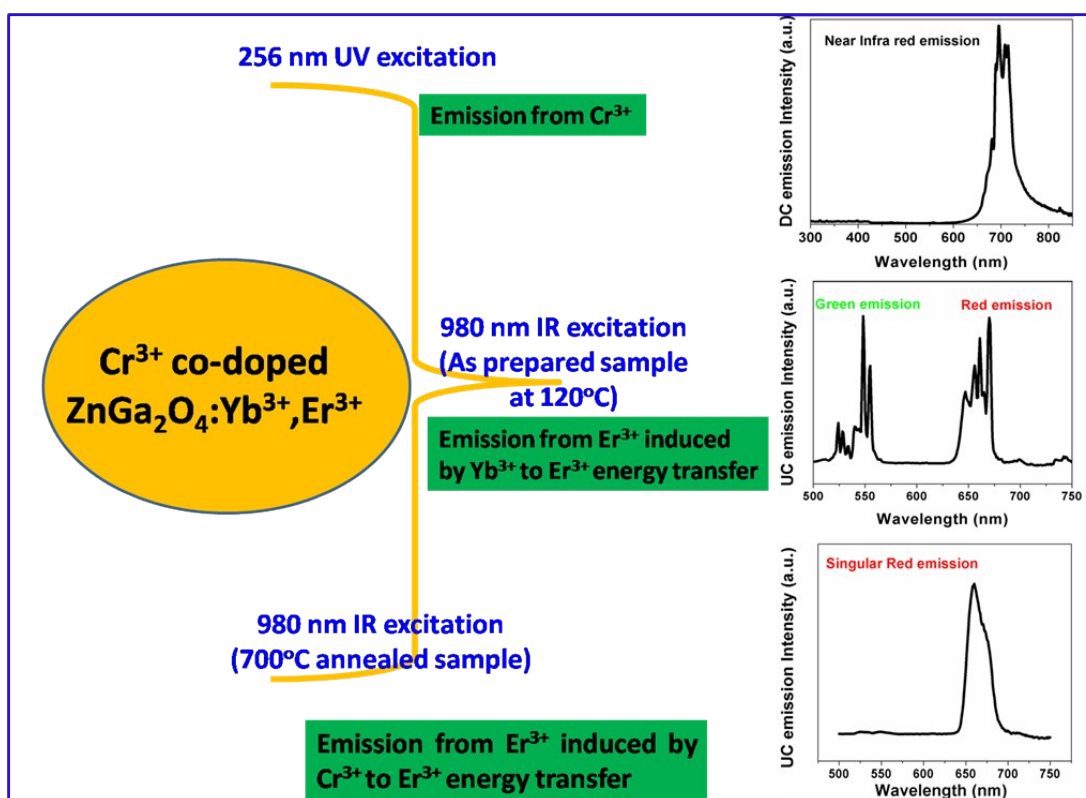


Figure S1. Schematic showing three different emissions: (a) DC NIR emission ~ 700 nm under UV excitation, (b) UC singular red emission from the ZGO-YEC-700 NPs under 980 nm excitation, and (c) UC dual red and green emissions from the ZGO-YEC-AP NPs under 980 nm excitation.

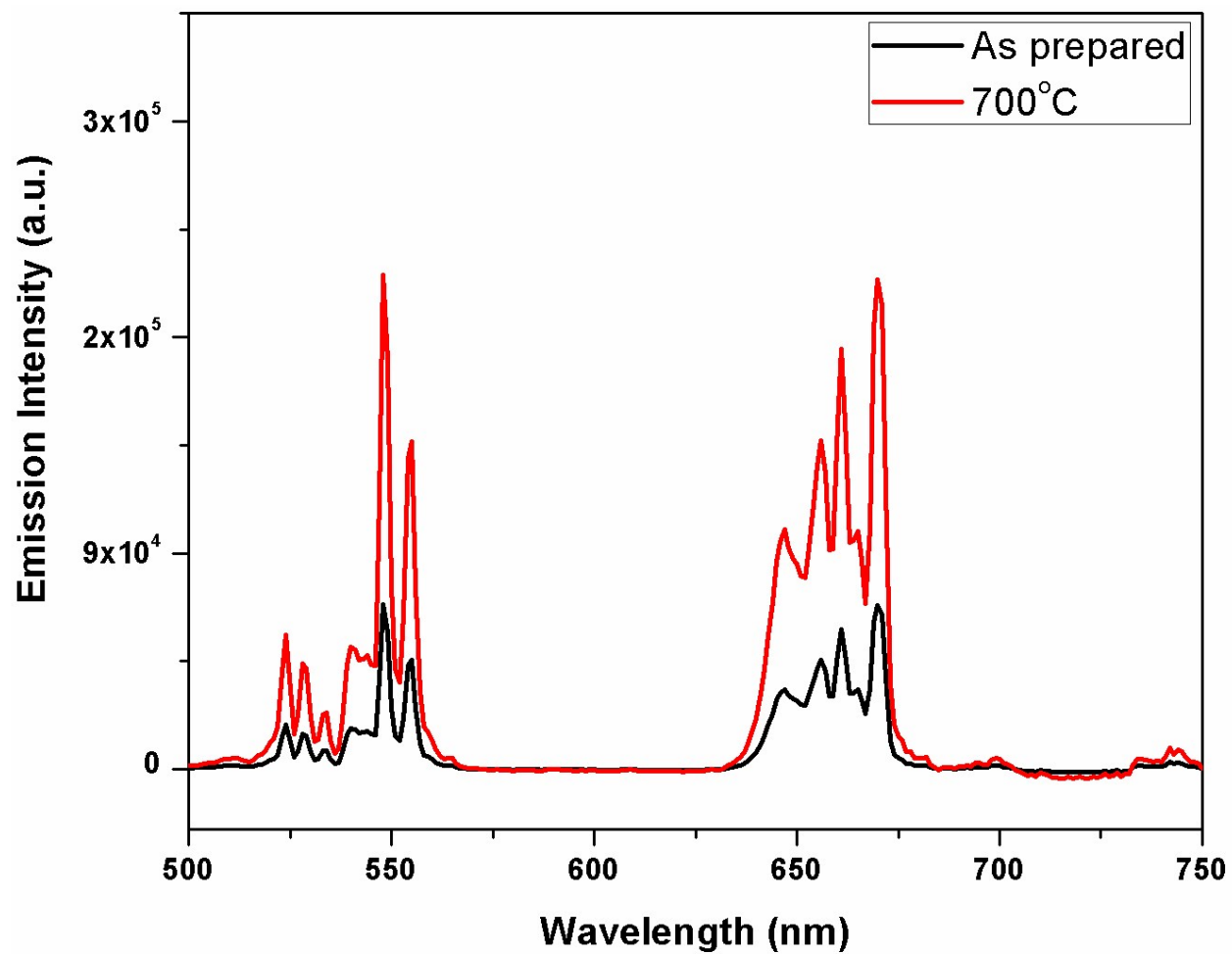


Figure S2. Emission spectra of the as-prepared and the thermally treated ZGO-YE NPs without chromium doping.

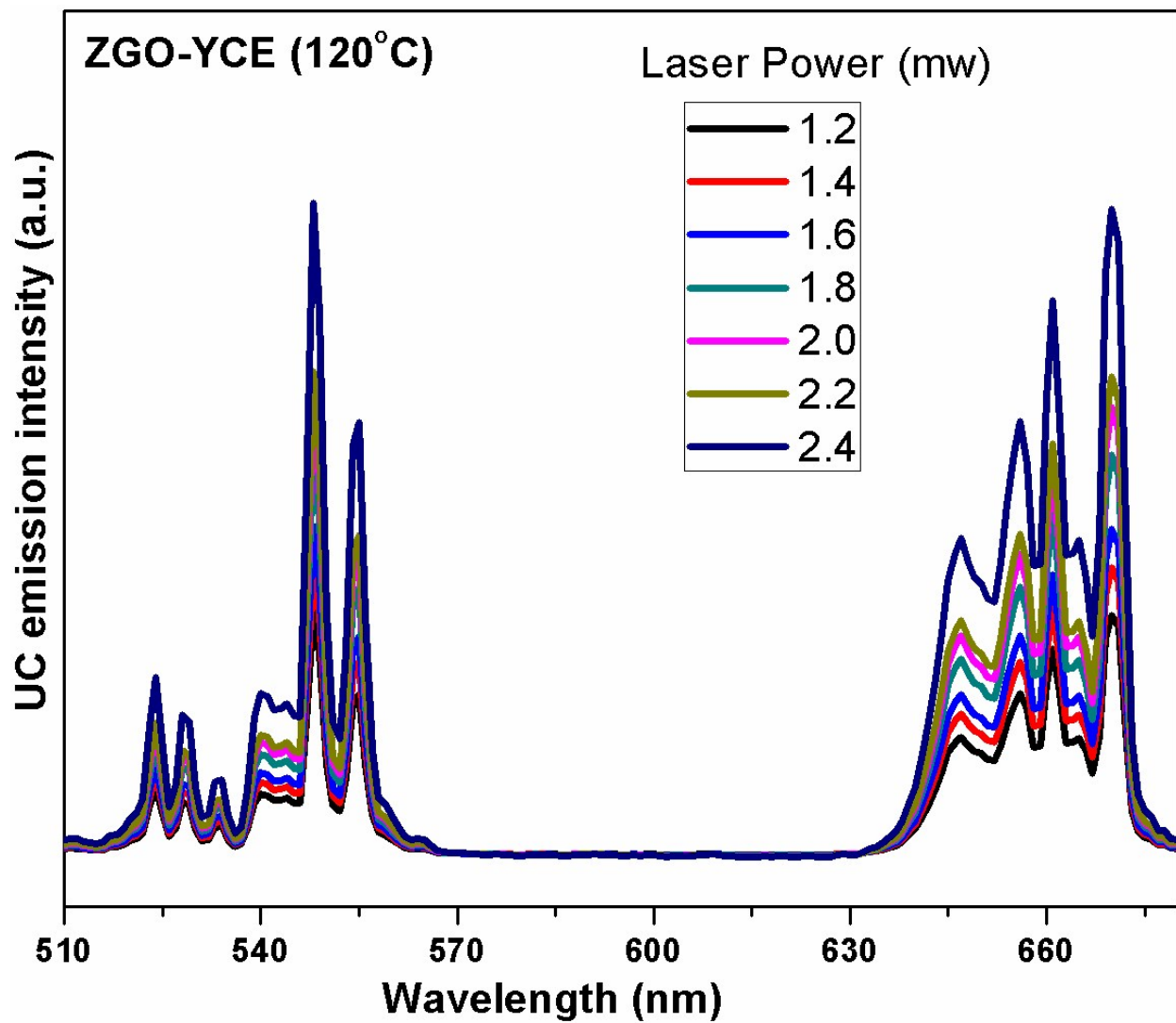


Figure S3. UC emission spectra of the ZGO-YEC-AP excited at different laser powers.

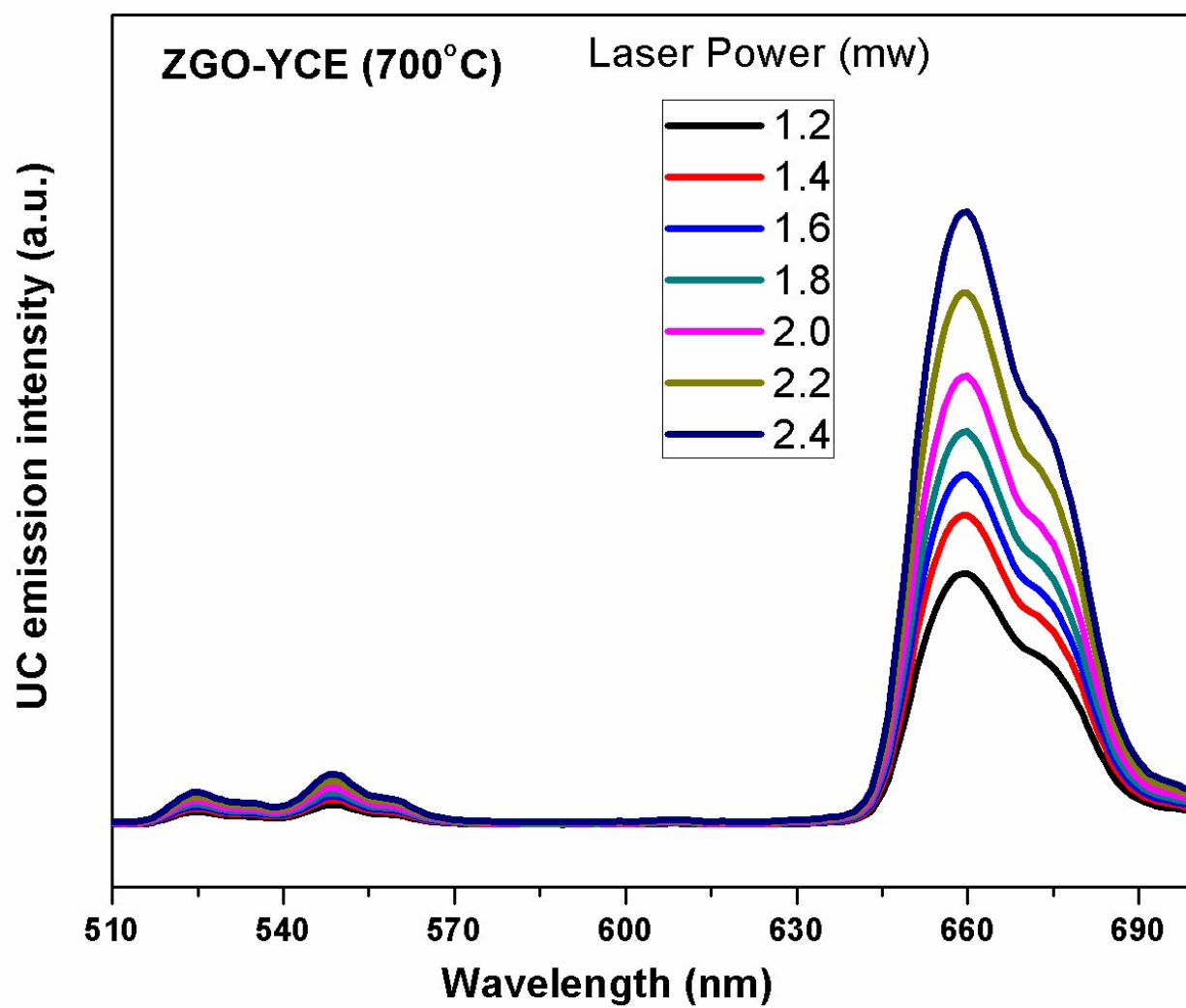


Figure S4. UC emission spectra of the ZGO-YEC-700 excited with different laser powers.

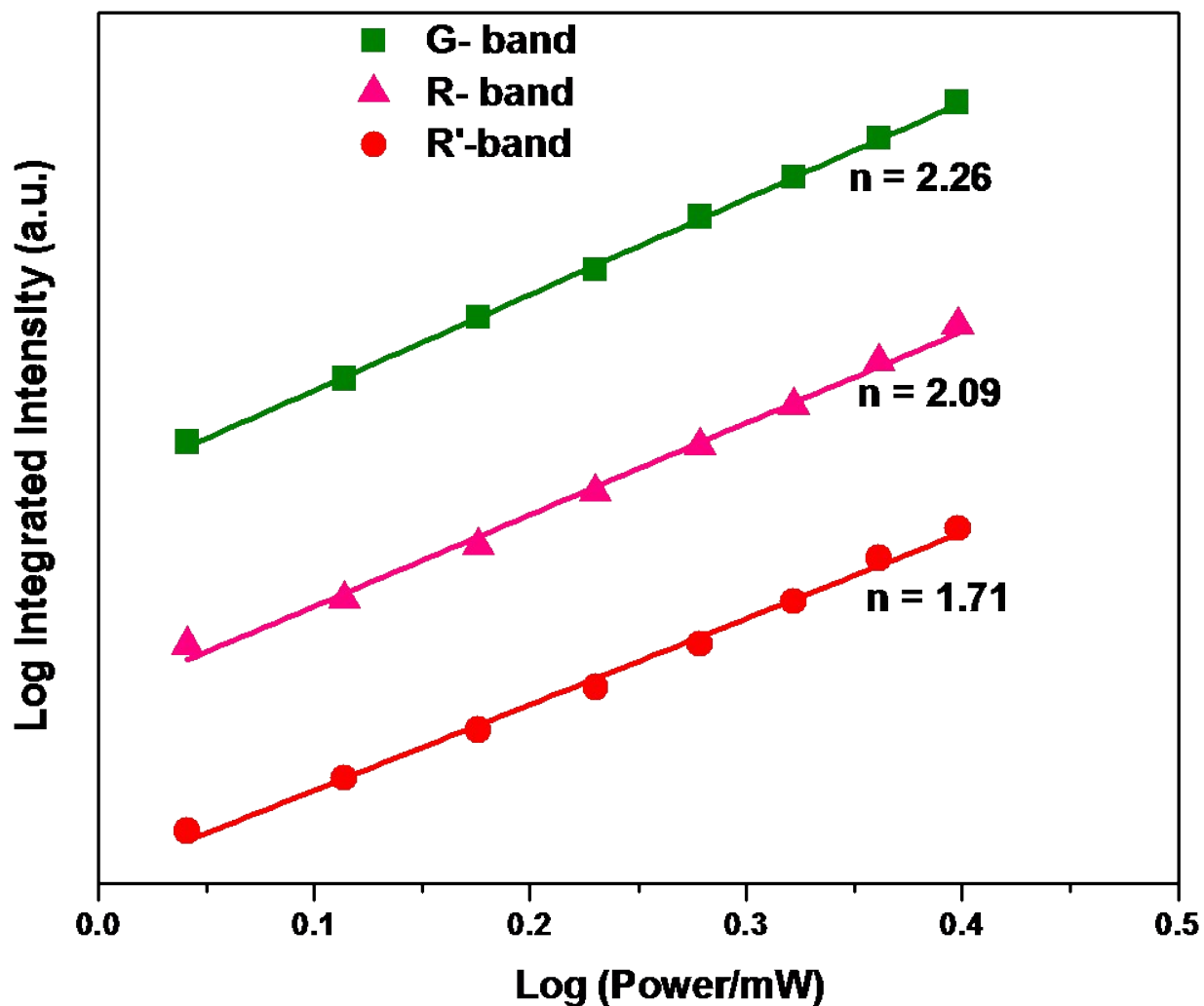


Figure S5. Log–log plot of UC emission intensity vs laser power for involving 550 nm (G-band) and 660 nm (R-band) peaks of the ZGO-YEC-AP NPs and that of only 660 nm (R'- band) peak from the ZGO-YEC-700 NPs.