

Supporting Electronic Information

The effect of temperature and time on the properties of 2D Cs₂ZnBr₄ perovskite nanocrystals and its application in a Schottky barrier device

O. Akinbami¹, G.N. Ngubeni¹, F. Otieno^{1,2}, R. Kadzutu-Sithole¹, E.C. Linganiso^{1,3,4}, Z.N.
Tetana^{1,3,4}, S.S. Gqoba¹, K.P. Mubiayi^{1,3*} and N. Moloto^{1*}

¹*Molecular Sciences Institute, School of Chemistry, University of the Witwatersrand, Private Bag
3, Wits, 2050, South Africa*

²*Department of Physics, University of the Witwatersrand, Private Bag 3, Wits, 2050, Republic of
South Africa*

³*DSI/NRF Centre of Excellence in Strong Materials, University of the Witwatersrand, Private
Bag 3, Wits 2050, South Africa*

⁴*Microscopy and Microanalysis Unit, University of the Witwatersrand, Private Bag 3,
Johannesburg, Wits 2050, South Africa*

*Corresponding authors: K.P. Mubiayi and N. Moloto

Email: Kalenga.Mubiayi@wits.ac.za; Nosipho.Moloto@wits.ac.za

Tel: +2711 717 6720; +2711 717 6774

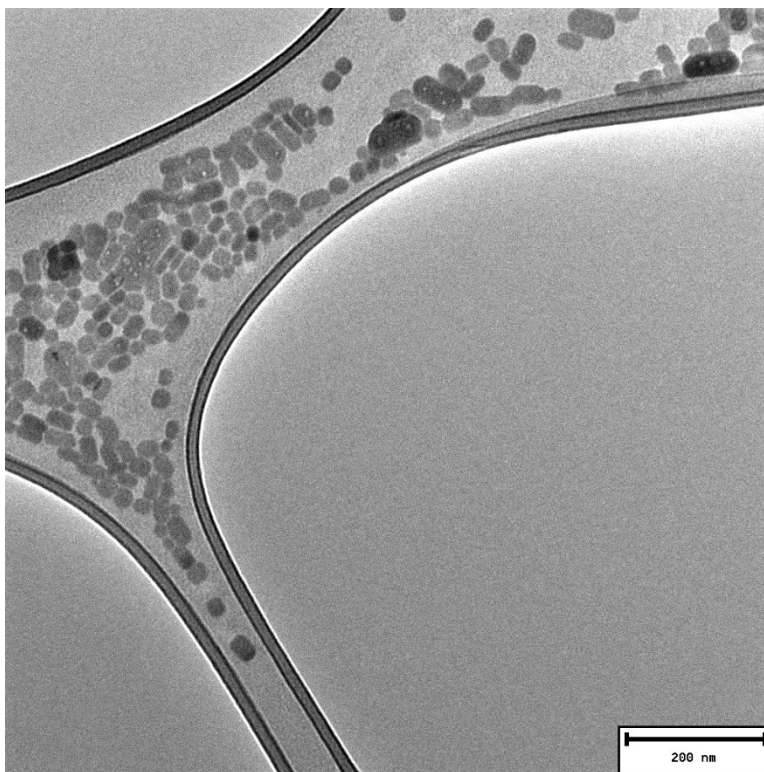
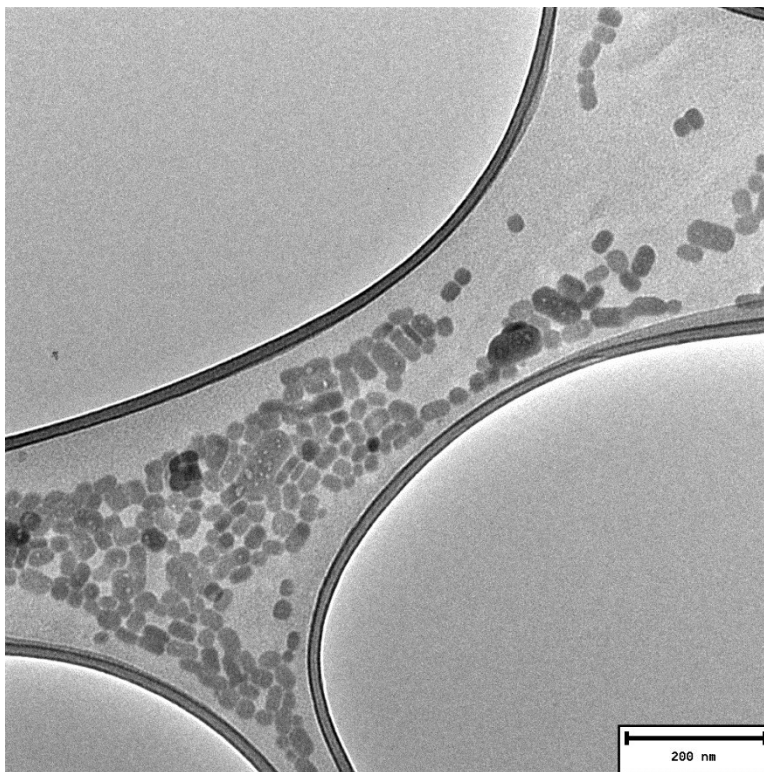


Fig. 1S: Higher magnification TEM images of Cs₂ZnBr₄ nanocrystals synthesized at 160 °C and 1 min.

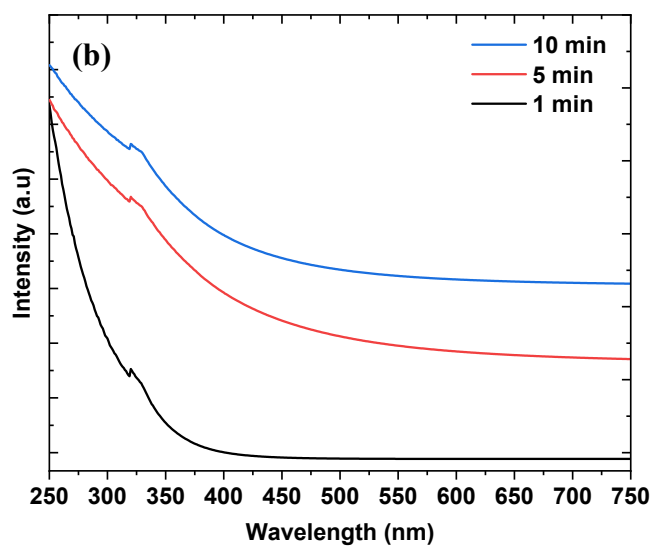
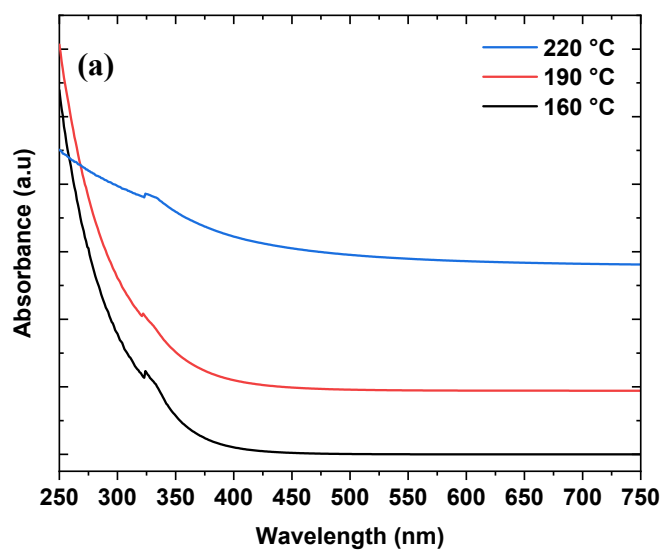


Fig. 2S: UV-vis spectra of Cs₂ZnBr₄ nanocrystals synthesized at different (a) temperature (b) time.

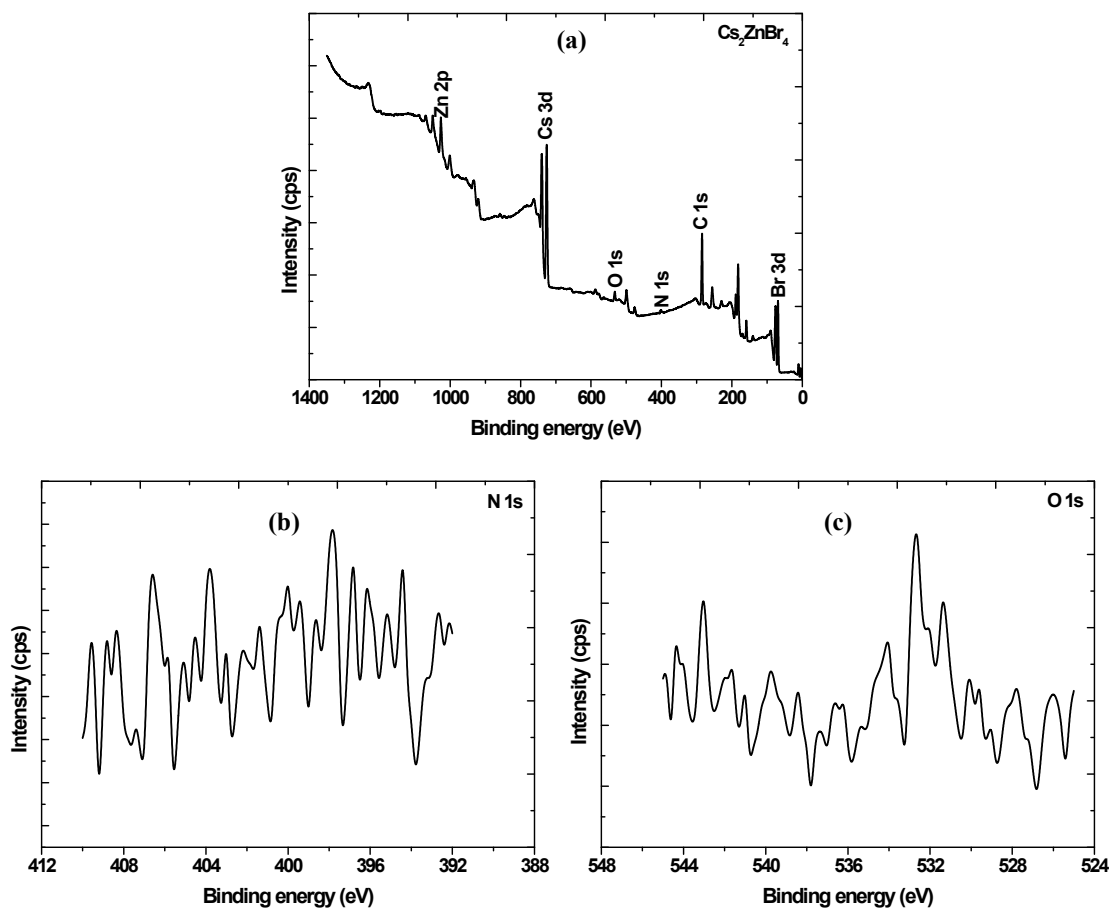


Fig. 3S: (a) XPS survey spectrum, (b) N 1s and (c) O 1s high-resolution spectra of Cs_2ZnBr_4 nanocrystals synthesized at 160 °C for 1 min.

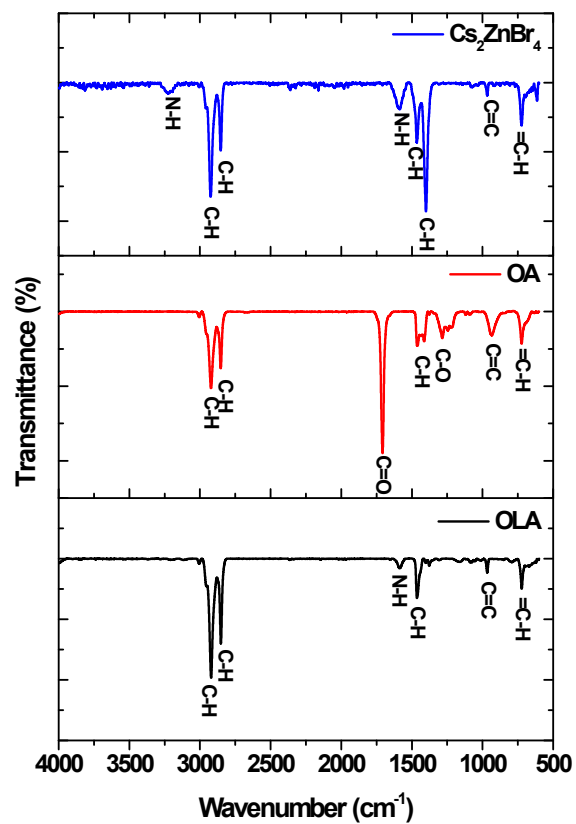


Fig. 4S: FTIR spectra of oleylamine, oleic acid and Cs₂ZnBr₄ nanocrystals synthesized at 160 °C for 1 min.

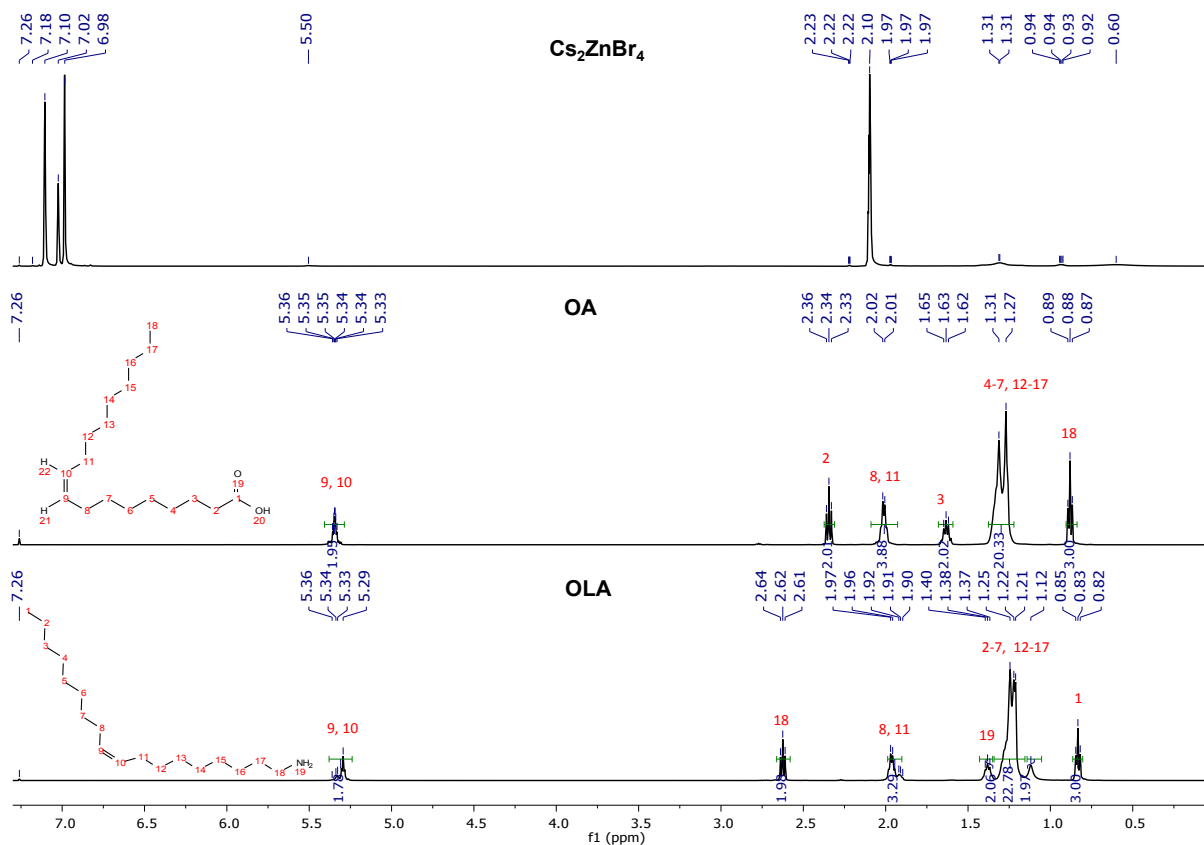


Fig. 5S: ^1H NMR spectra of oleylamine, oleic acid and Cs_2ZnBr_4 nanocrystals synthesized at $160\text{ }^\circ\text{C}$ for 1 min.

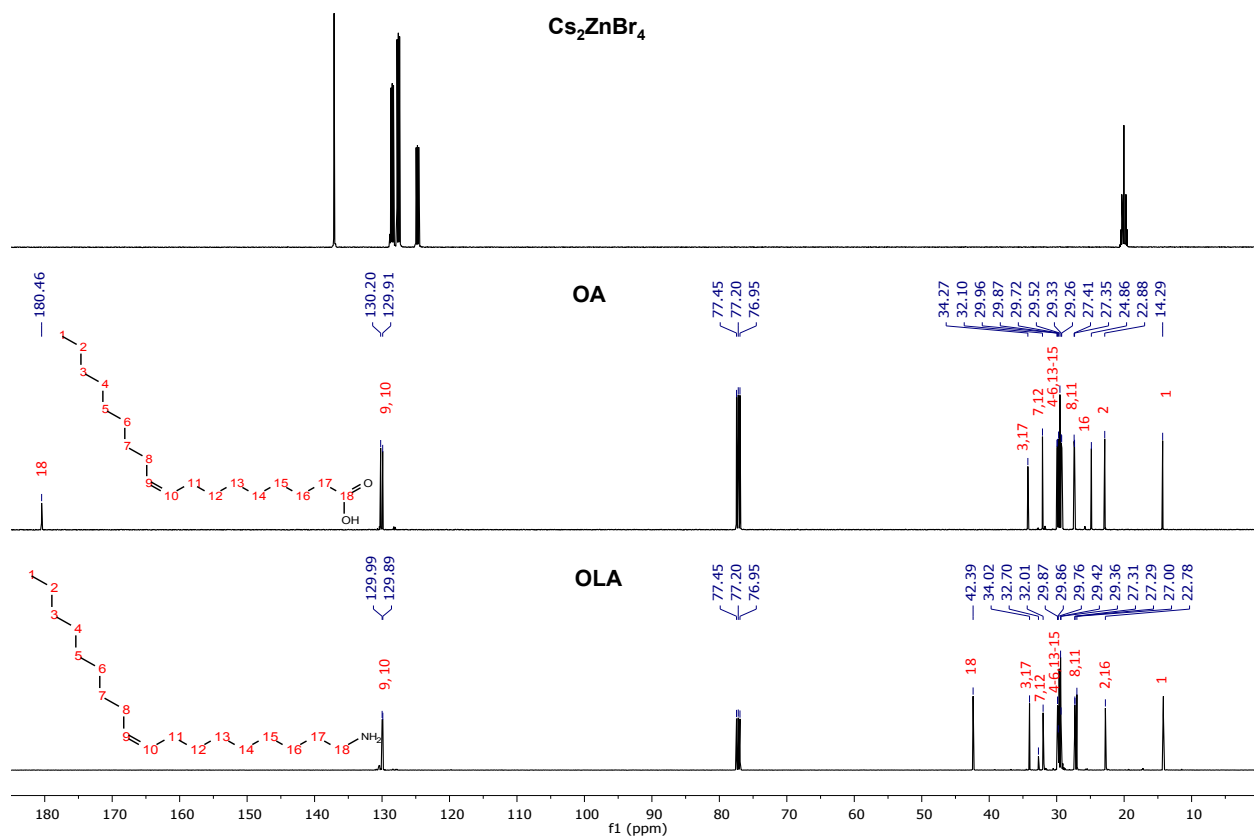


Fig. 6S: ^{13}C NMR spectra of oleylamine, oleic acid and Cs_2ZnBr_4 nanocrystals synthesized at 160°C for 1 min.