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## **Supplementary Information**

## Fine tuning compact ZnO blocking layers for enhanced photovoltaic performance in ZnO based DSSC: a detailed insight using $\beta$ recombination, EIS, OCVD and IMVS techniques

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Fig. S1. SEM image of ZnO active layer (depicts the top view of the ZnO active layer, coatings are porous in nature).



Fig. S2. AFM image of bare FTO coated glass.



Fig. S3. Nyquist plots of ZnO devices with various blocking layer thickness.



Fig. S4. Randles circuit used for fitting the impedance data.