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**Transparent, Flexible and Light-Sensitive High Performance Solid-State Supercapacitor** BUDDHA DEKA BORUAH, PhD Research Scholar, ARNAB MAJI, Student, ABHA MISRA, Associated Professor — Supercapacitor, considered as a promising energy storage device because of their additional unique features such as high power density, fast charge–discharge rate, long cycling life, safe operation and low cost, etc. Therefore, recently the rapid development of transparent and flexible supercapacitor is considered as great research challenge. In general, during the fabrication of flexible and transparent supercapacitor, electroactive materials directly transfer on the flexible current collectors or bind the electroactive materials with the current collectors using binder. However, the direct transfer of electrochemically active materials on the current collectors induce higher junction resistance due to weak adhesion. This results in introducing the rapid voltage or capacitance drops during the charging-discharging process of supercapacitors. These issues are resolved by directly growing ZnCo<sub>2</sub>O<sub>4</sub> nanorods (NRs) on flexible indium tin oxide (ITO) coated polyethylene terephthalate (PET) substrates (ZnCo<sub>2</sub>O<sub>4</sub> NRs/ITO) to fabricate transparent, solid-state ITO/ZnCo<sub>2</sub>O<sub>4</sub> NRs//ZnCo<sub>2</sub>O<sub>4</sub> NRs/ITO supercapacitor. Large surface-to-volume ratio of ZnCo<sub>2</sub>O<sub>4</sub> NRs exposes more electrochemically active surface area. The direct growth of ZnCo<sub>2</sub>O<sub>4</sub> NRs on ITO coated PET provides unique ion/charge conduction path and hence excellent ion-diffusion efficiency. Furthermore, fabricated electrodes and the solid-state supercapacitor display the excellent transparency and highly sensitive towards the visible light illumination.

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