## **Supplementary Information**

## Cobalt-zinc nitride on nitrogen doped carbon black nanohybrids as a non-noble metal electrocatalyst for oxygen reduction reaction

Y. Yuan, <sup>a,b</sup> L. Yang, <sup>a,b</sup> B. He, <sup>a</sup> E. Pervaiz, <sup>a,b</sup> Z. Shao<sup>a,\*</sup> and M. Yang<sup>a,\*</sup>

<sup>&</sup>lt;sup>c</sup> School of Chemical & Materials Engineering (SCME), National University of Sciences & Technology (NUST), Islamabad,44000, Pakistan

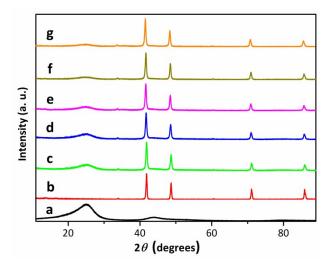


Fig. S1 XRD patterns of (a) carbon black, (b)  $Co_3ZnN$ , (c) carbon black supported 10%  $Co_3ZnN$ , (d) 20%, (e) 30%, (f) 40%, (g) 50%.

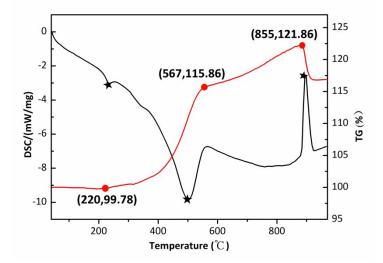


Fig. S2 Differential scanning calorimetry (DSC) and Thermogravimetric analysis (TGA) curves of Co₃ZnN.

<sup>&</sup>lt;sup>a</sup> Dalian Institute of Chemical Physics, Chinese Academy of Sciences, 457 Zhongshan Road, Dalian, 116023, China

<sup>&</sup>lt;sup>b</sup> University of Chinese Academy of Sciences, 19 A Yuquan Rd, Shijingshan District, Beijing, 100049, P. R. China