We have successfully synthesized a series of Co-N_x/C electro-catalysts with varied densities of Co-N_x sites by dispersing and confining active sites *via* using zinc ion as the template. By measuring the weight percentages of ionic cobalt species in the CZs, it is experimentally concluded that the half-wave potential could be positively related to the amount of cobalt ion. 15CZ with Co/Zn = 15/85 demonstrates the best ORR performance among all the synthesized CZs. In addition, we adopted poisoning tests to figure out the role of Co-N_x sites played in ORR. Importantly, we quantified the H_2O_2 production rate and probed the ORR pathway by differentiating the ring current against time, and found that H_2O_2 yield is a result of the competition between the desorption and reduction of H_2O_2, which is determined by the catalyst's surface properties. Though M-N_x site is active enough in catalyzing the first step of ORR into H_2O_2 at elevated site density, but unfortunately kinetically sluggish compared with platinum in reducing the H_2O_2 intermediate in the second ORR regardless of the site density. Thus, to diminish H_2O_2 amount produced during ORR, the catalyst should be capable of effectively adsorbing hydrogen peroxide species, and more importantly, efficiently reducing it into water subsequently for the complete oxygen reduction to water by a pure four electron transfer pathway.