Nanostructured metal oxide graphene composites with high energy density is of great interest as a next generation Li ion battery (LIB) anode. One of the main challenges in the fabrication of these batteries is to ensure that the electrode maintains its integrity over many charge/discharge (C/D) cycles.

Here a new method is developed to prepare densely stacked cobalt monoxide (CoO)/graphene layered composite utilizing the concept of pre-aligning oppositely charged Co²⁺ anchored graphene oxide (GO) and amine functionalized graphene (GN) in solution, which play the key role [1]. The resulting densely stacked CGO/GN, which on thermal reduction (rCGO/GN) (Fig.1) renders key role [1]. The resulting densely stacked CGO/GN, which on thermal reduction (rCGO/GN) (Fig.1) renders key role [1]. The resulting densely stacked CGO/GN, which on thermal reduction (rCGO/GN) (Fig.1) renders key role [1]. The resulting densely stacked CGO/GN, which on thermal reduction (rCGO/GN) (Fig.1) renders key role [1]. The resulting densely stacked CGO/GN, which on thermal reduction (rCGO/GN) (Fig.1) renders key role [1]. The resulting densely stacked CGO/GN, which on thermal reduction (rCGO/GN) (Fig.1) renders key role [1]. The resulting densely stacked CGO/GN, which on thermal reduction (rCGO/GN) (Fig.1) renders key role [1]. The resulting densely stacked CGO/GN, which on thermal reduction (rCGO/GN) (Fig.1) renders key role [1].

As shown in Fig.2, the composite exhibits exceptional high rate capability (>800 mA.h.g⁻¹ at a C/D rate of 1.0 A.g⁻¹) and particularly maintains excellent cyclic stability up to 1000 cycles (> 700 mA.h.g⁻¹ at a C/D rate of 1.0 A.g⁻¹). The origin of the sustained high capacity is proposed to be arising from the large and stable pseudocapacitance contribution in the low voltage region stabilized by the compact structure.

**References**