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SUPPORTING INFORMATION

Graphene-guided growth of rare earth doped $Bi_2Mo_2O_9$ nano self-assembly for enhanced asymmetric supercapacitor device performance

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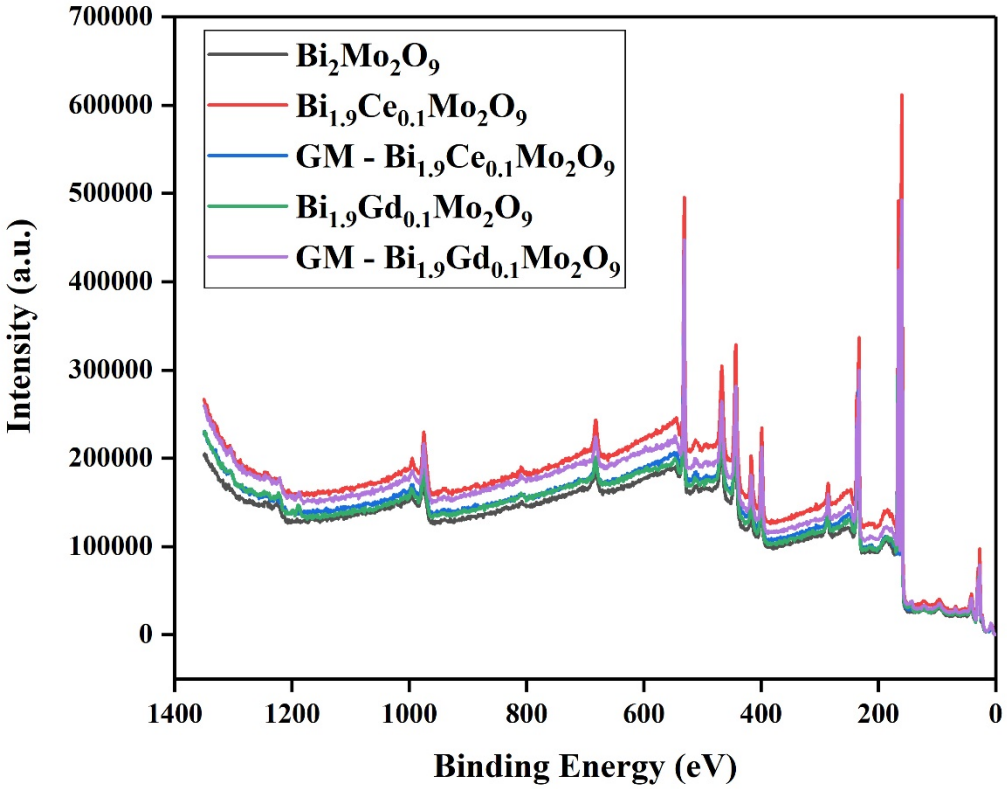

Figure S1: Comparative survey spectrum of $Bi_2Mo_2O_9$, $Bi_{1.9}Ce_{0.1}Mo_2O_9$, GM-$Bi_{1.9}Ce_{0.1}Mo_2O_9$, $Bi_{1.9}Gd_{0.1}Mo_2O_9$, and GM-$Bi_{1.9}Gd_{0.1}Mo_2O_9$.

Table 1: Amount of precursors used in the synthesis of $Bi_2Mo_2O_9$, $Bi_{1.9}Ce_{0.1}Mo_2O_9$, GM-$Bi_{1.9}Ce_{0.1}Mo_2O_9$, $Bi_{1.9}Gd_{0.1}Mo_2O_9$, and GM-$Bi_{1.9}Gd_{0.1}Mo_2O_9$

Sample	**Bismuth (III) nitrate pentahydrate ($Bi(NO_3)_3 \cdot 5H_2O$)**	**Ammonium heptamolybdate tetrahydrate ($(NH_4)_6Mo_7O_{24} \cdot 4H_2O$)**	**Cerium Nitrate hexahydrate ($Ce(NO_3)_3 \cdot 6H_2O$)**	**Gadolinium Nitrate hexahydrate ($Gd(NO_3)_3 \cdot 6H_2O$)**	**rGO**
$Bi_2Mo_2O_9$	0.84 g	0.30 g			
$Bi_{1.9}Ce_{0.1}Mo_2O_9$	0.76 g	0.30 g	0.070 g		
GM-$Bi_{1.9}Ce_{0.1}Mo_2O_9$	0.76 g	0.30 g	0.070 g		0.03g
$Bi_{1.9}Gd_{0.1}Mo_2O_9$	0.76 g	0.30 g		0.078 g	
GM-$Bi_{1.9}Gd_{0.1}Mo_2O_9$	0.76	0.30 g		0.078 g	0.03g

Table 2: Weight percentage of $Bi_2Mo_2O_9$, $Bi_{1.9}Ce_{0.1}Mo_2O_9$, GM-$Bi_{1.9}Ce_{0.1}Mo_2O_9$, $Bi_{1.9}Gd_{0.1}Mo_2O_9$, and GM-$Bi_{1.9}Gd_{0.1}Mo_2O_9$ from EDS analysis.

Elements	Weight %				
	$Bi_2Mo_2O_9$	$Bi_{1.9}Ce_{0.1}Mo_2O_9$	GM-$Bi_{1.9}Ce_{0.1}Mo_2O_9$	$Bi_{1.9}Gd_{0.1}Mo_2O_9$	GM-$Bi_{1.9}Gd_{0.1}Mo_2O_9$
Bi	39.31	35.47	25.84	30.52	34.69
Mo	18.81	36.82	49.32	41.25	37.41
O	41.42	25.16	22.21	28.23	27.63
Dopant		2.55 (Ce)	2.63 (Ce)	0 (Gd)	0.27(Gd)

Table 3: BET analysis of $Bi_2Mo_2O_9$ and GM-$Bi_{1.9}Ce_{0.1}Mo_2O_9$.

Sample	Surface area (m2 g^{-1})	Pore volume (cc g^{-1})	Pore diameter (nm)
$Bi_2Mo_2O_9$	15.087	0.029	3.660
GM-$Bi_{1.9}Ce_{0.1}Mo_2O_9$	21.851	0.126	23.398