

**Stable Neodymium Gallium Oxide ($\text{Nd}_3\text{Ga}_5\text{O}_{12}$ and Nd_3GaO_6) phases: A study for
Asymmetric Supercapacitor Applications**

Govarthini Seerangan Selvam^a, Jesman Sthevan Kovil Pitchai^b, Balaji Krishnasamy^c, Ramesh
Rajendran^d, Thangaraju Dheivasigamani^{a*}

*^aNano-crystal Design and Application Lab (n-DAL), Department of Physics, PSG Institute of
Technology and Applied Research, Coimbatore-641062, Tamil Nadu, India.*

*^bSolid State Ionics Lab, PG & Research Department of Physics, Thanthai Periyar Government
Arts and Science College (Autonomous), (Affiliated to Bharathidasan University),
Tiruchirappalli-620023, Tamil Nadu, India.*

*^c Department of Chemistry, PSG Institute of Technology and Applied Research, Coimbatore-
641062, Tamil Nadu, India.*

^dDepartment of Physics, Periyar University, Salem-636011, Tamil Nadu, India.

The corresponding author*

Thangaraju Dheivasigamani (dthangaraju@gmail.com)

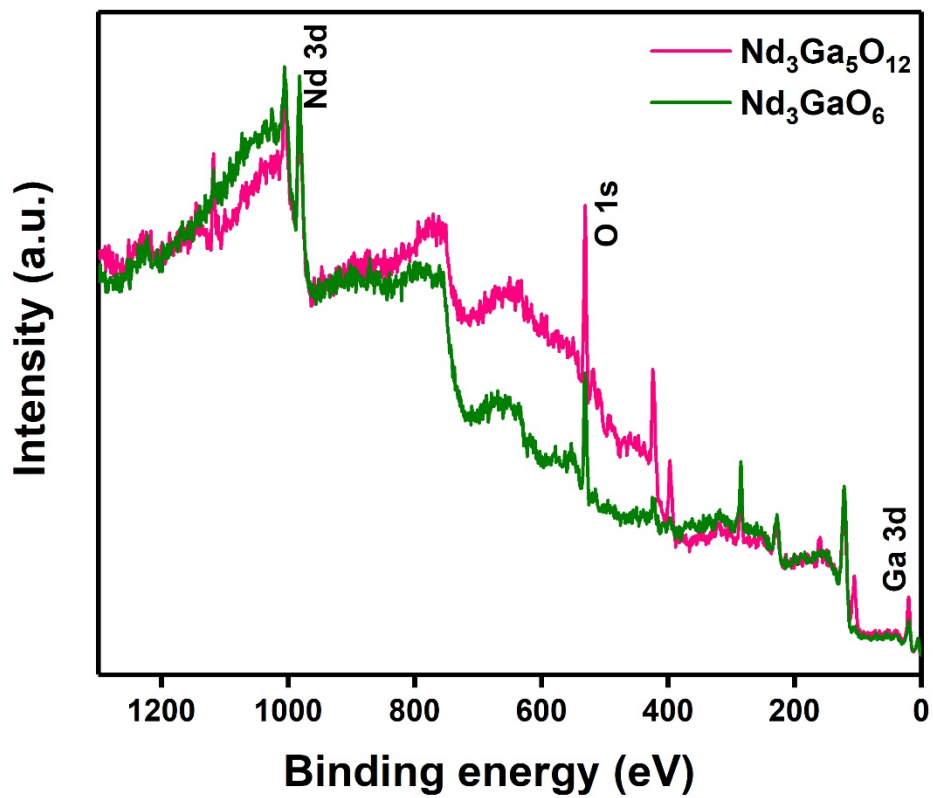


Figure S1. XPS survey scan spectra of as-synthesized $\text{Nd}_3\text{Ga}_5\text{O}_{12}$ and Nd_3GaO_6

Table S1: Electrochemical performance comparison of as-synthesised Nd₃Ga₅O₁₂ with reported rare earth garnets:

S.No	Electrode Material	Electrolyte	Specific Capacitance	Ref
1	Eu ₃ Ga ₅ O ₁₂	3M KOH	303 Cg ⁻¹	20
2	Gd ₃ Ga ₅ O ₁₂	3M KOH	180 Cg ⁻¹	20
3	Dy ₃ Ga ₅ O ₁₂	3M KOH	256 Cg ⁻¹	20
4	Er ₃ Ga ₅ O ₁₂	3M KOH	216 Cg ⁻¹	20
5	Yb ₃ Ga ₅ O ₁₂	3M KOH	261 Cg ⁻¹	20
6	Sm ₃ Ga ₅ O ₁₂	3M KOH	91.95mAhg ⁻¹	19
7	Lu ₃ Ga ₅ O ₁₂	3M KOH	658 Fg ⁻¹	21
8	Nd ₃ Ga ₅ O ₁₂	3M KOH	418 Fg ⁻¹	This work