

SUPPORTING INFORMATION

One-pot synthesis of microporous carbons highly enriched in nitrogen and their electrochemical performance

A. B. Fuertes, G. A. Ferrero and M. Sevilla*

Instituto Nacional del Carbón (CSIC), P.O. Box 73, Oviedo 33080, Spain

* Corresponding author: martasev@incar.csic.es; Fax: +34 985 297662; Tel: +34 985 119090.

Table S1. Textural properties and chemical composition of N-doped porous carbons synthesised by means of the co-carbonization of mixtures formed by an organic salt and melamine (Melamine/organic salt weight ratio = 4). Reaction temperature: 800 °C

Organic salt	Textural properties			Chemical composition [wt %]			(N/C) Atomic ratio
	S _{BET} [m ² g ⁻¹]	V _p [cm ³ g ⁻¹] ^a	V _{micro} [cm ³ g ⁻¹] ^b	N	C	O	
Sodium gluconate	560	0.24	0.22	22.0	61.2	14.7	0.31
Sodium alginate	600	0.28	0.24	24.8	53.7	19.1	0.40
Sodium citrate	620	0.30	0.23	28.0	53.5	17.1	0.45

^a Pore volume at $p/p_0 \sim 0.95$. ^b Micropore volume determined by the t -plot technique.

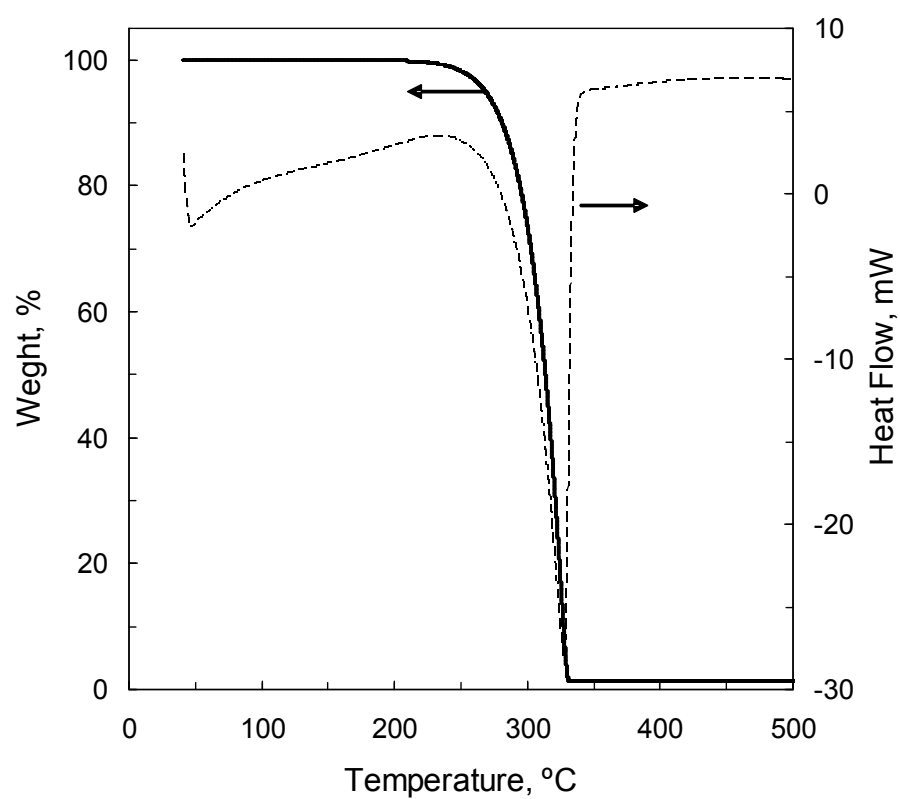


Figure S1. Thermogravimetric analysis of melamine under a nitrogen flow (Heating Rate: $3\text{ }^{\circ}\text{C}\cdot\text{min}^{-1}$).

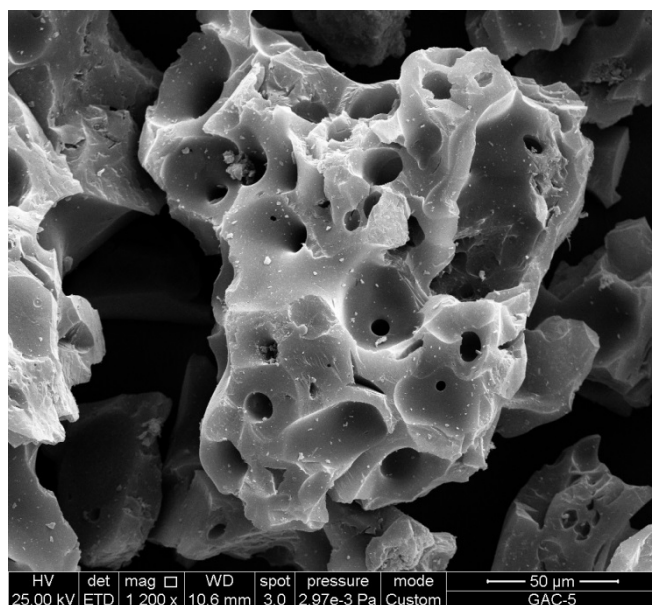


Figure S2. SEM microphotograph of a carbon prepared by the direct carbonization of potassium gluconate at 800 °C.

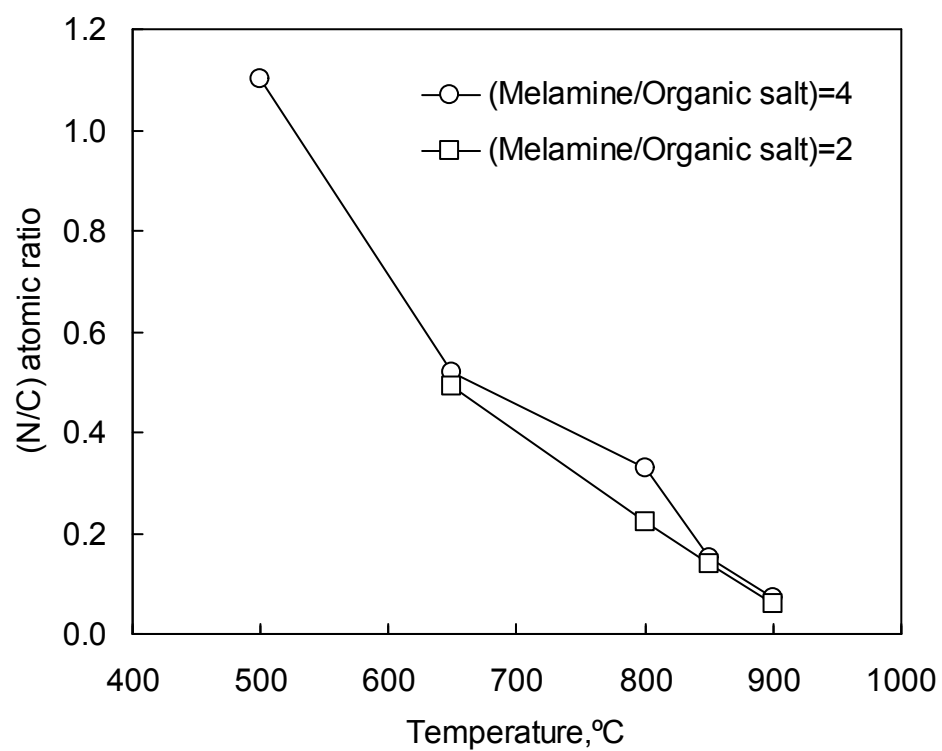


Figure S3. Variation of the (N/C) atomic ratio with the temperature of synthesis.

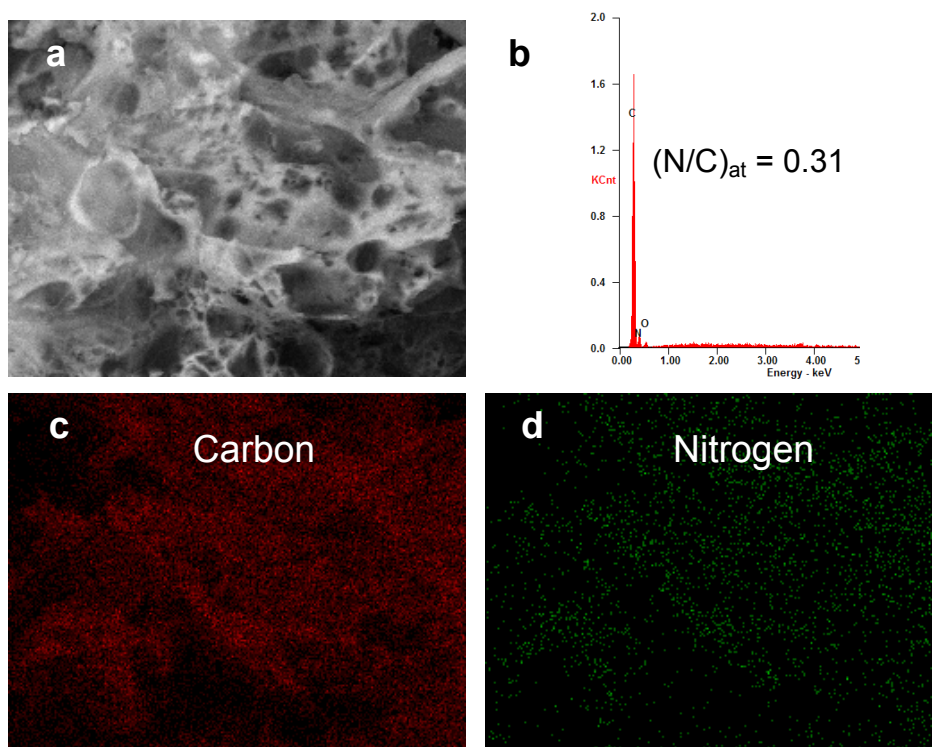


Figure S4. (a) SEM image, (b) EDX spectrum and elemental composition, and (c, d) EDX mappings for carbon and nitrogen of an N-doped carbon particle (CN-800-4).

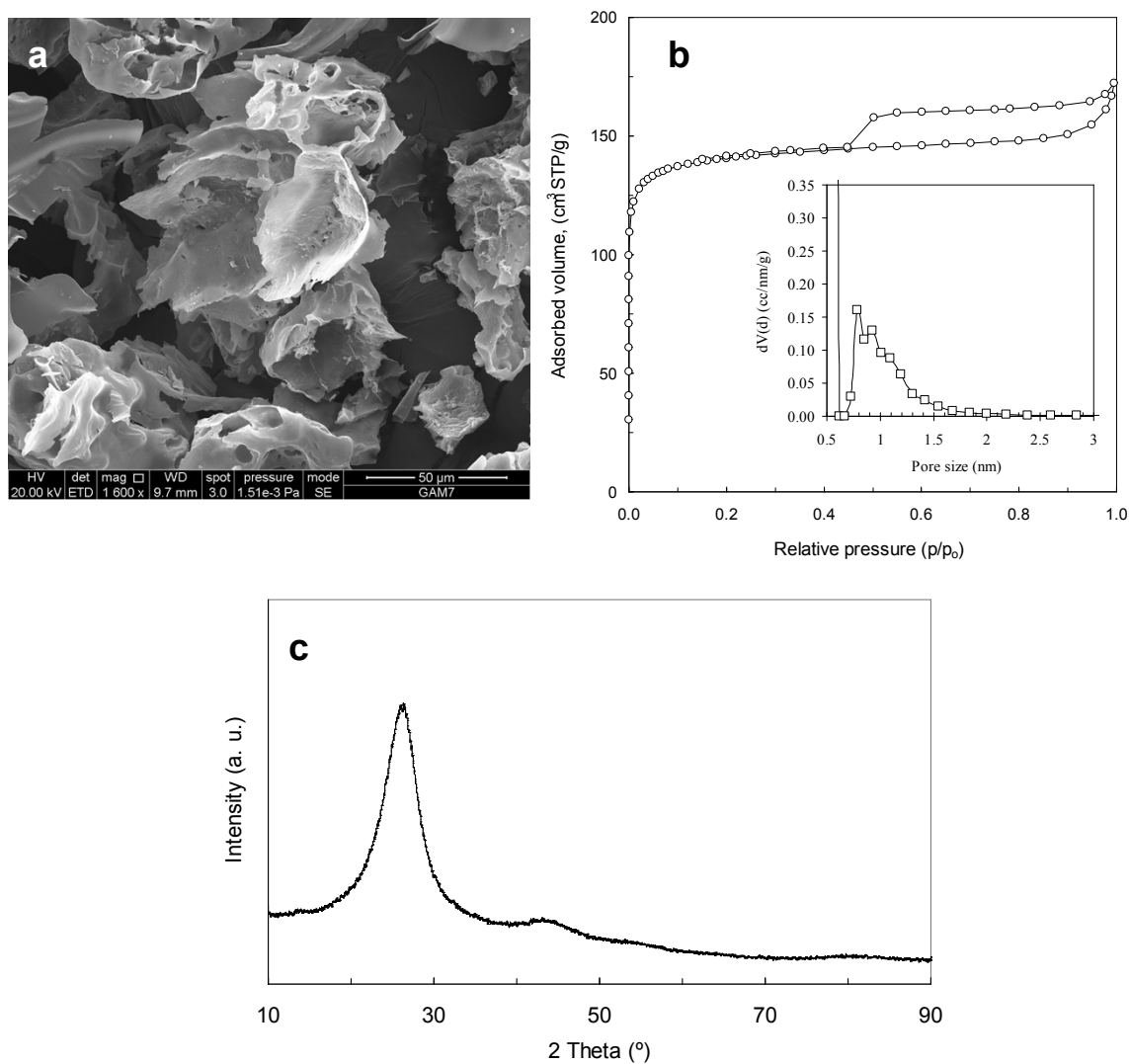


Figure S5. (a) SEM image, (b) nitrogen sorption isotherm (Inset: micropore size distribution) and (c) XRD pattern of the N-doped carbon sample obtained by co-carbonization of a sodium gluconate/melamine mixture (Weight ratio: 1/4) at 800°C .

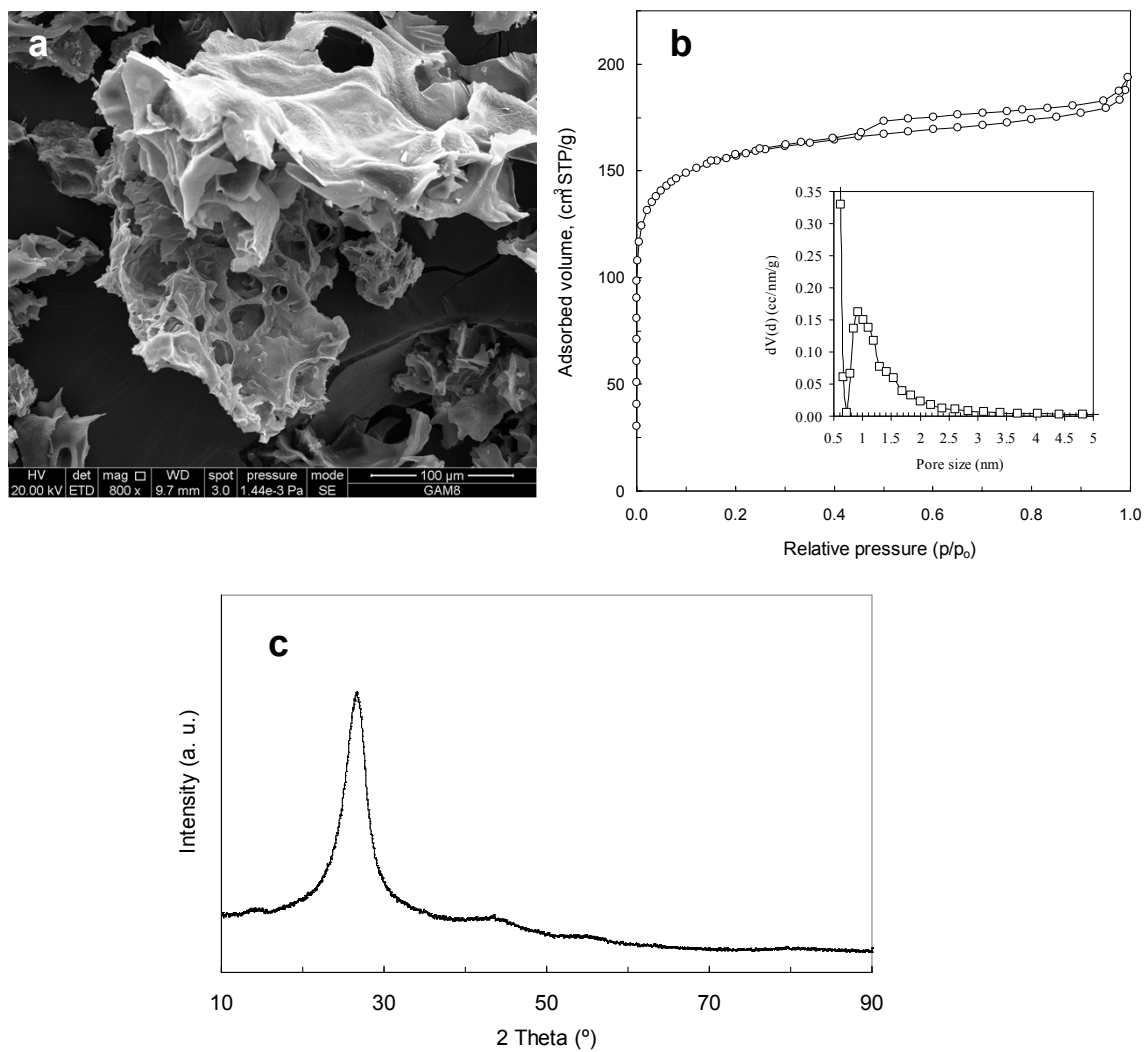


Figure S6. (a) SEM image, (b) nitrogen sorption isotherm (Inset: micropore size distribution) and (c) XRD pattern of the N-doped carbon sample obtained by co-carbonization of a sodium alginate/melamine mixture (Weight ratio: 1/4) at 800°C.

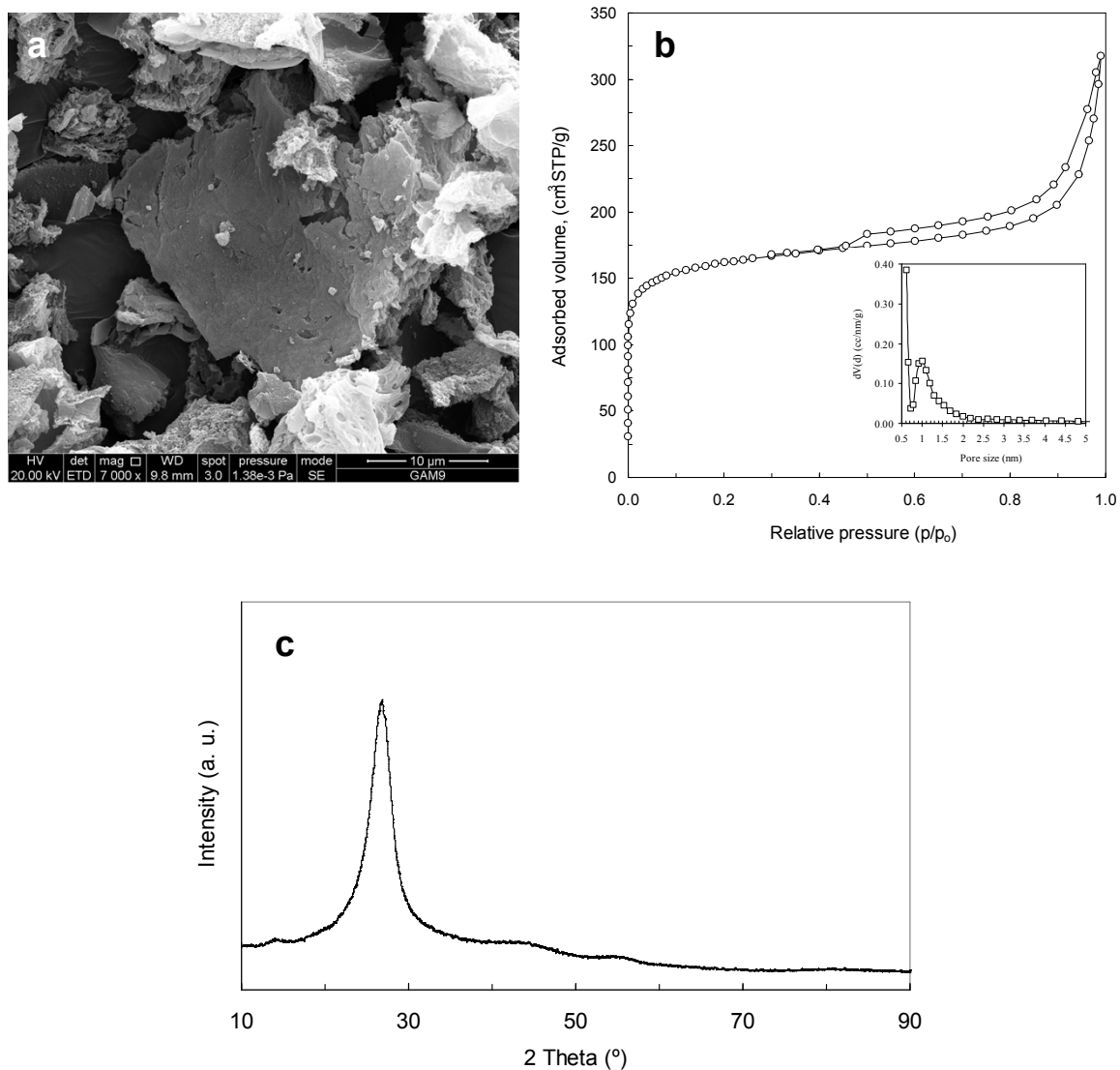


Figure S7. (a) SEM image, (b) nitrogen sorption isotherm (Inset: micropore size distribution) and (c) XRD pattern of the N-doped carbon sample obtained by co-carbonization of a sodium citrate/melamine mixture (Weight ratio: 1/4) at 800°C.

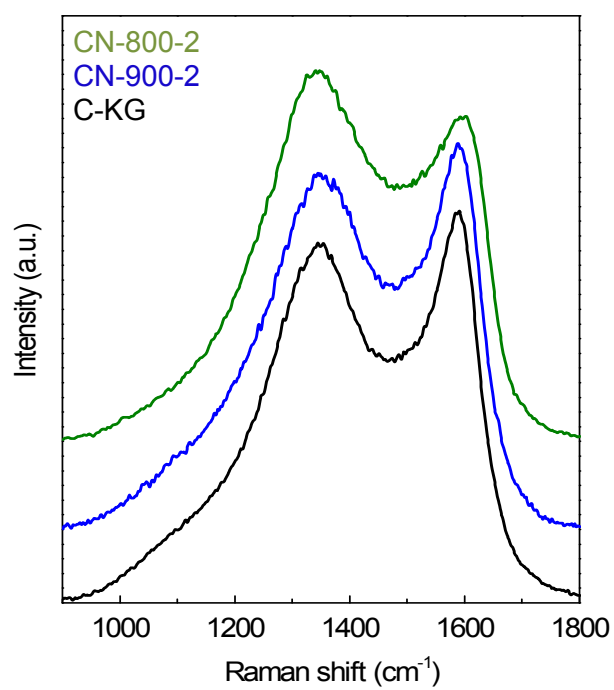


Figure S8. Raman spectra of the undoped carbon (C-KG) and N-doped carbons (CN-800-2 and CN-900-2).