Electronic supplementary information

Glucose-Based Highly-Porous Activated Carbon Nano Sphere (g-ACNS) for High Capacity Hydrogen Storage

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1. Benchmark of carbon-based materials for H$_2$ storage application

Table S1: Hydrogen storage capacity for different carbon materials.

Sample	Hydrogen capacity	Surface Area	Retention	Pressure	Temp.	Ref.
	wt%	m^2/g		MPa	K	
Nano Fiber	0.4	150		4	77	[19]
Graphene	0.34	20.5		10	77	This work
A-NF	0.6	265		4	77	[19]
XC72	1.39	215.6		10	77	This work
SWNTs	2			10	80	[20]
MWNT	5			10	300	[38]
AX21	4.8	2513		4	77	[19]
KUA6[c]	5.6	3808		4	77	[19]
AC-K5	7.08	3190		2	77	[21]
g-ACNS	5.04	2291-2555	100%	10	77	This work

[a]D band (1350 cm^{-1}) and G band (1580 cm^{-1}) Ratio, higher value (I$_D$/I$_G$) represents more surface sp2 structures

[b] High Surface Area and KOH Activated Carbon Made from Anthracite Coal

[c] Mixed Activated Carbon (abbreviated as AC, chemically pure, Shanghai Dahe Chemical Reagent Ltd.) and KOH for Calcination at 750°C under Argon atmosphere (KOH: AC = 1:5)

2. Raman analysis on the structural defects of CNs and reference samples
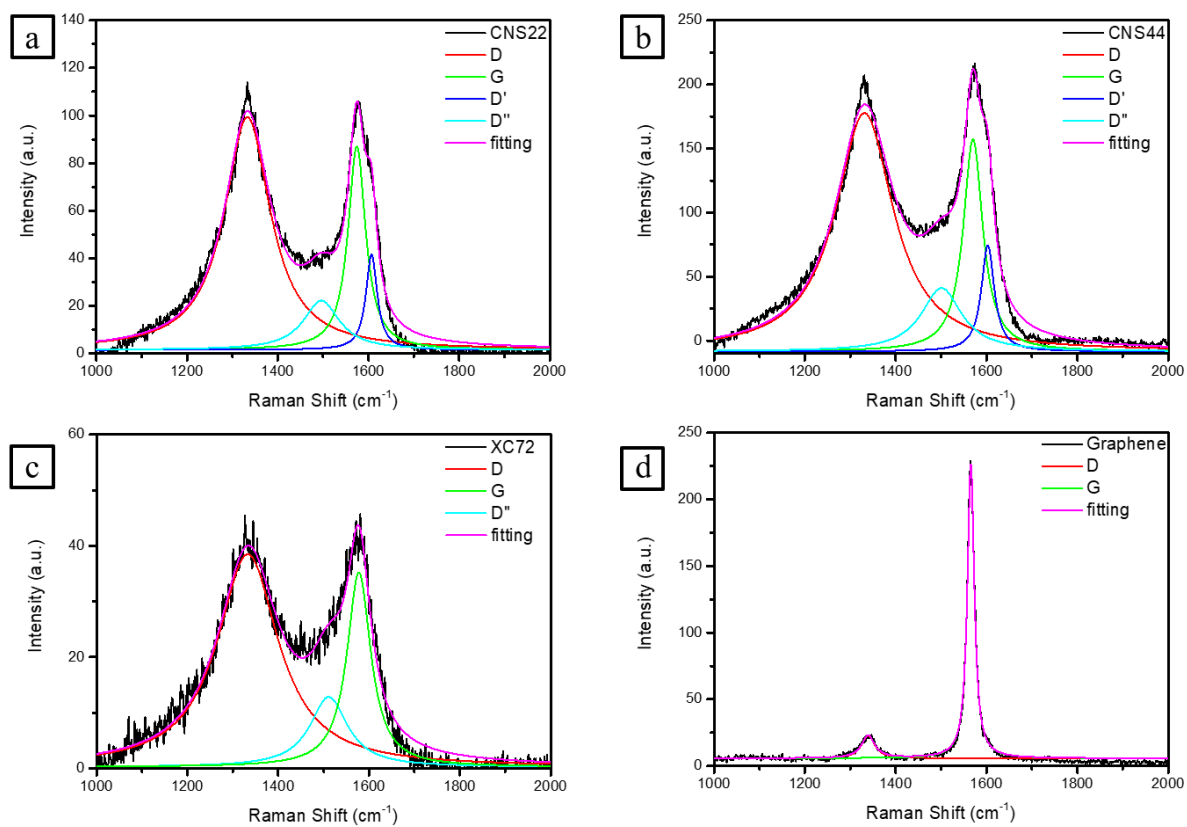

Figure S1. The fitting curves of Raman spectra for carbon nanosphere (CNS22 and CNS24), commercial active carbon (XC-72) and Graphene.