

## Boosting electrical conduct in a gel-derived material by nanostructuring with trace carbon nanotubes

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### Preparation of the CNTs•1 composites

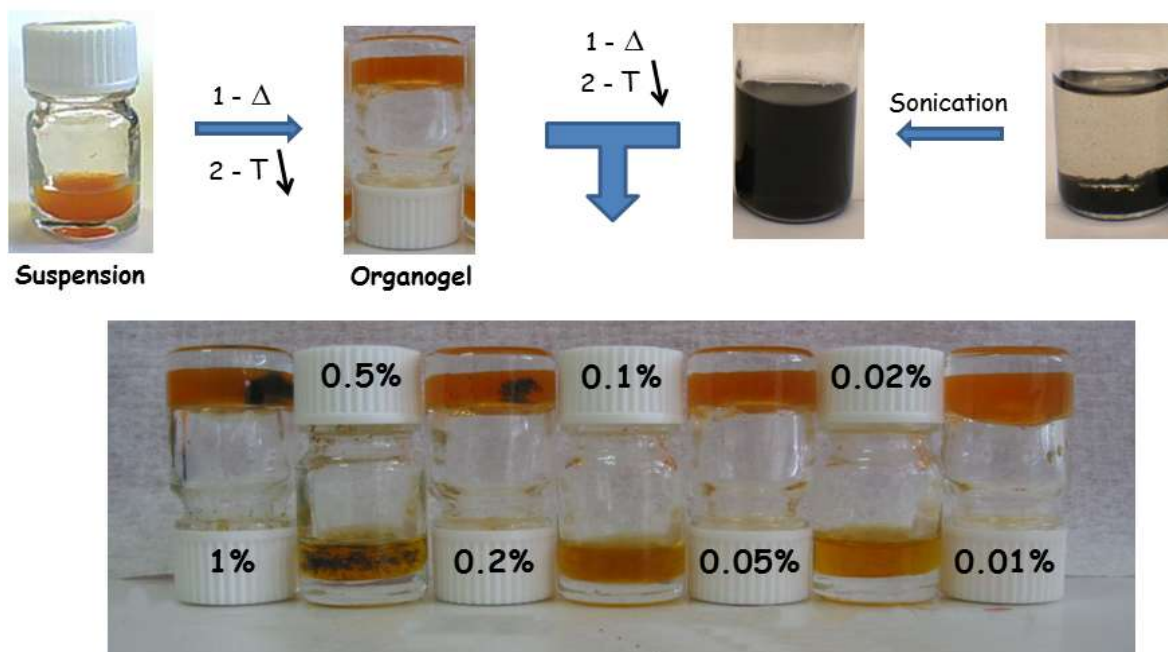
The composite materials were prepared in four solvents, namely chloroform, chlorobenzene, *o*-dichlorobenzene and tetrahydrofuran (THF). The critical gelation concentration (CCG – Table S1) of compound **1** varies in these solvents. As a consequence, the amount of carbon nanotubes was adapted for each series of gels. Table S2 gathers the masses of carbon nanotubes that were introduced in the different samples and, Figure S1 represents our methodology to prepare the composite materials.

**Table S1.** Critical gelation concentrations (CCG) of **1** depending on the solvent.

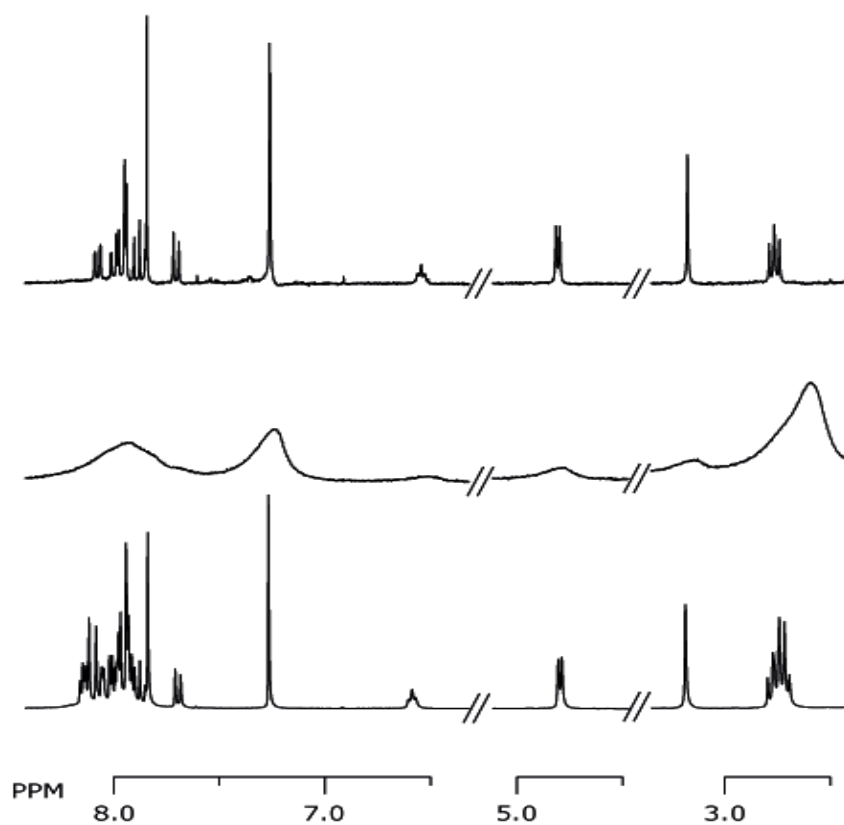
Chloroforme	8 mg mL <sup>-1</sup>
Chlorobenzene	6 mg mL <sup>-1</sup>
<i>o</i> -Dichlorobenzene	5 mg mL <sup>-1</sup>
Tetrahydrofuran	12 mg mL <sup>-1</sup>

**Table S2.** Mass of nanotubes in each samples for a volume V = 0.5 mL.

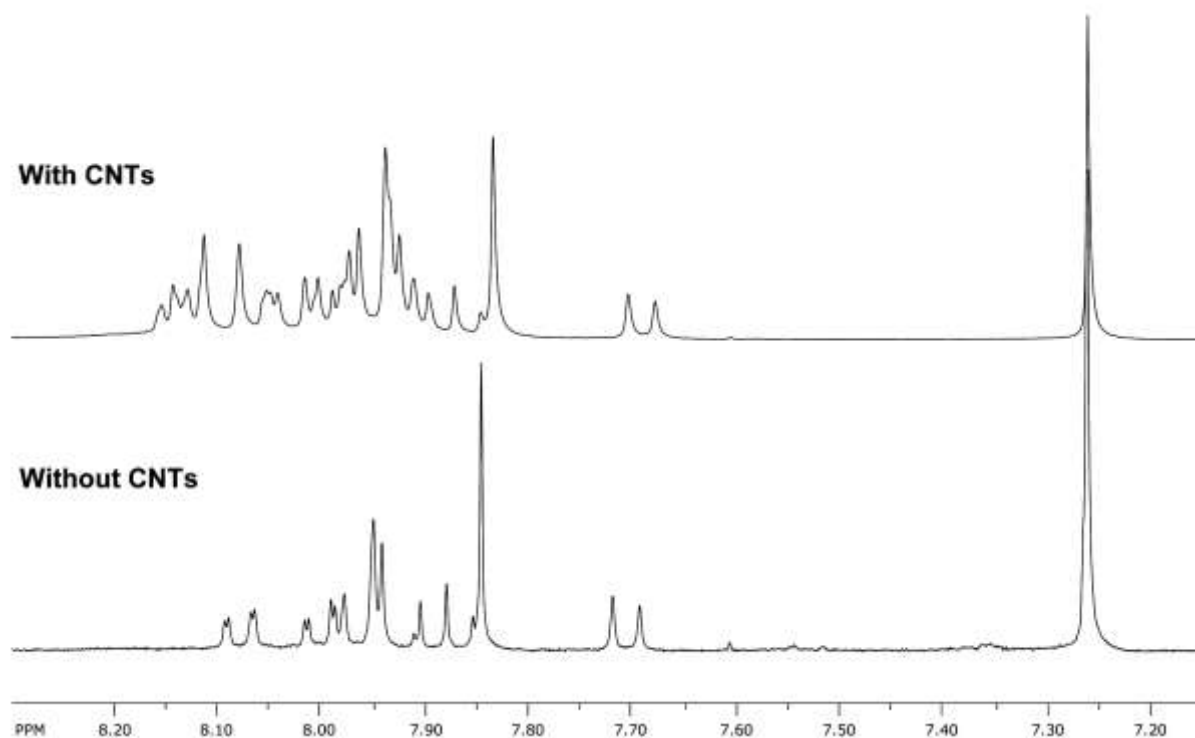
% w of CNTs vs gelating compound	m(CNTs) in chloroform	m(CNTs) in chlorobenzene	m(CNTs) in <i>o</i> -dichlorobenzene	m(CNTs) in THF
0.01%	4 x 10 <sup>-7</sup> g	3 x 10 <sup>-7</sup> g	2.5 x 10 <sup>-7</sup> g	6 x 10 <sup>-7</sup> g
0.02%	8 x 10 <sup>-7</sup> g	6 x 10 <sup>-7</sup> g	5 x 10 <sup>-7</sup> g	1.2 x 10 <sup>-6</sup> g
0.05%	2 x 10 <sup>-6</sup> g	1.5 x 10 <sup>-6</sup> g	1.25 x 10 <sup>-6</sup> g	3 x 10 <sup>-6</sup> g
0.10%	4 x 10 <sup>-6</sup> g	3 x 10 <sup>-6</sup> g	2.5 x 10 <sup>-6</sup> g	6 x 10 <sup>-6</sup> g
0.20%	8 x 10 <sup>-6</sup> g	6 x 10 <sup>-6</sup> g	5 x 10 <sup>-6</sup> g	1.2 x 10 <sup>-5</sup> g
0.50%	2 x 10 <sup>-5</sup> g	1.5 x 10 <sup>-5</sup> g	1.25 x 10 <sup>-5</sup> g	3 x 10 <sup>-5</sup> g



**Figure S1.** Schematic representation of our methodology for the introduction of carbon nanotubes (Solvent: *o*-dichlorobenzene)



**Figure S2.**  $^1\text{H}$  NMR spectra of **1** without SWCNTs (bottom), and with SWCNTs without and with centrifugation (middle and top, respectively);  $\text{CDCl}_3$ ;  $[\mathbf{1}] = 7 \text{ mg mL}^{-1} = \text{CGC}$ . Centrifugation was performed on heated solutions.



**Figure S3.** Zoom on the aromatic region of the spectra presented in Figure S2.

#### Infrared spectra with CNTs before and after doping

The spectra were run on a gel sample (black spectrum) deposited on a KBr disc, using the inorganic solid as background followed by deposition of the gel and drying (hence the negative water signal) and then followed by doping with iodine vapour (red spectrum), which shows the characteristic charge transfer band for conducting TTF derivatives. There are no significant differences between these spectra and the ones recorded on the gel with no CNTs (see D. Canevet, Á. Pérez del Pino, D.B. Amabilino, M. Sallé, *J. Mater. Chem.*, **2011**, *21*, 1428–1437 )

