

# FASTAB™ TECHNOLOGY

## Macroscopic-scale carbon nanotube alignment via self-assembly in lyotropic liquid crystals

### Auteur(s) / Author(s)

SCHYMURA Stefan<sup>(1)</sup> ; ENZ Eva<sup>(1)</sup> ; ROTH Siegmar<sup>(2)</sup> ; SCALIA Giusy<sup>(2,3)</sup> ; LAGERWALL Jan P. F.<sup>(1)</sup> ;

### Affiliation(s) du ou des auteurs / Author(s) Affiliation(s)

<sup>(1)</sup> Martin Luther University Halle-Wittenberg, Institute for Chemistry - Physical Chemistry, Mühlpforte 1, 06108 Halle, ALLEMAGNE

<sup>(2)</sup> Max Planck Institute for Solid State Research, Heisenbergstrasse 1, 70569 Stuttgart, ALLEMAGNE

<sup>(3)</sup> ENEA CR Portici, 8055 Portici, NA, ITALIE

### Résumé / Abstract

By dispersing carbon nanotubes (CNTs) in a lyotropic liquid crystalline matrix, uniaxial alignment of the nanotubes can easily be achieved over macroscopic areas. We briefly describe the principles behind the technique and then show that it can be applied to multiwall as well as single-wall nanotubes and that a variety of different dispersing materials can be used, from industrial surfactants to DNA. We also present a new microfluidics-based method for transferring the liquid crystal-dispersed CNTs to a substrate, maintaining a fair control of tube direction.

### Revue / Journal Title

Synthetic metals ISSN 0379-6779 CODEN SYMEDZ

### Source / Source

Congrès

International Conference on Science and Technology of Synthetic Metals (ICSM 2008), Porto de Galinhas, Pernambuco, BRÉSIL (06/07/2008)

2009, vol. 159, n° 21-22 (273 p.) [Document : 3 p.] (24 ref.), pp. 2177-2179 [3 page(s) (article)]

### Editeur / Publisher

Elsevier, Lausanne, SUISSE (1979) (Revue)

### Mots-clés anglais / English Keywords

Singlewalled nanotube ; Lyotropic liquid crystals ; Carbon nanotubes ; Lattice parameters ; Self alignment ;

### Mots-clés français / French Keywords

Nanotube monofeuillet ; Cristal liquide lyotrope ; Nanotube carbone ; Paramètre cristallin ; Autoalignement ;

### Mots-clés espagnols / Spanish Keywords

Autoalineación ;

### Mots-clés d'auteur / Author Keywords

Received 14 August 2008 ; Received in revised form 6 August 2009 ; Accepted 12 August 2009 ; Available online 9 September 2009 ; Keywords ; Carbon nanotubes ; Lyotropic liquid crystal ; Alignment ;

### Localisation / Location

INIST-CNRS, Cote INIST : 18315, 35400018664384.0080



**FLUIGENT**

Siège social : Paris Santé Cochin - 29 rue du Faubourg Saint Jacques – 75014 Paris - France

Tel : +331 71 18 20 55 – Fax : +331 46 33 16 68

[www.fluigent.com](http://www.fluigent.com)