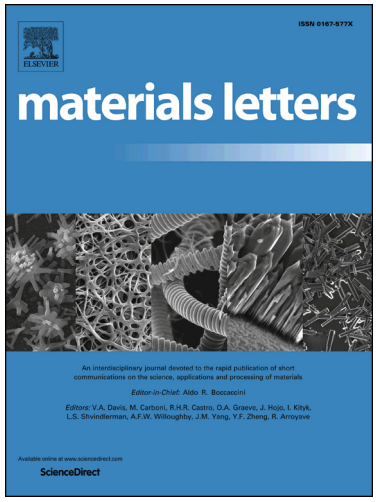

Self assembled transparent conducting network of multi-walled carbon nanotubes formed by evaporation

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PII: S0167-577X(17)31068-6
DOI: http://dx.doi.org/10.1016/j.matlet.2017.07.032
Reference: MLBLUE 22874

To appear in: *Materials Letters*

Received Date: 6 May 2017
Revised Date: 16 June 2017
Accepted Date: 5 July 2017

Please cite this article as: B. Roy, S. Karmakar, S. Tarafdar, Self assembled transparent conducting network of multi-walled carbon nanotubes formed by evaporation, *Materials Letters* (2017), doi: http://dx.doi.org/10.1016/j.matlet.2017.07.032

Self assembled transparent conducting network of multi-walled carbon nanotubes formed by evaporation

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Abstract: We develop a novel bubble-array technique to create a network pattern of multi-walled carbon nanotubes(MWCNT) on glass, through evaporation of a thin layer of the suspension of MWCNT. Spherical bubbles of approximately equal diameter (~ 25 μm) are created at the air-fluid interface. On complete evaporation of the solvent(1,2 dicloroethane), MWCNT self assemble to form a connected and roughly polygonal network. The glass surface thus becomes electrically conducting, while the gaps in the network allow considerable transmission of light in the visible range. The concentration of the MWCNT suspension has been varied to optimize the balance between sheet conductance and transmittance.

Keywords: MWCNT, Bubbles, Evaporation, Transparent electrode

Recently research on carbon nanotube(CNT) transparent films has drawn a lot of attention due to their large number of practical applications[1;2]. Thin films of CNT network on a transparent substrate are now used extensively for making transparent electrodes for use in liquid crystal displays, touch screens, solar cells etc. These can be used as cost effective substitutes of indium tin oxide (ITO) coated glass. Two salient features of such films are high transparency and good electrical conductivity, which are crucial for many electronic de-