



Nano ring formation of MWCNT by dewetting of thin film

Surita Basu

Department of Chemical Engineering, Indian Institute of Technology, Delhi, New Delhi-110016, India

Abstract:

The fabrication of finite arrangement with nanoscale materials is key to current technology and self-assembly and self-organization is considered an efficient and cost-effective and so a preferred process for building ordered structure of nano particles. Carbon nanotubes are very interesting material for its properties and molecular structures. Carbon nanotubes can assemble in different morphologies depending on its physical synthesis method. The different morphologies of CNT are coiled CNTs, CNT junctions and toroidal CNTs. Thin polymer film < 100 nm also undergoes self-organization resulting in formation of arrays of droplets. These spontaneously formed ordered patterns or structures on the surface has wide range of technological applications. The retraction of fluid from the surface that it was supposed to cover leads to the phenomenon of dewetting causing the arrangement of droplets which act as a template for the self-assembly of the carbon nanotubes. The self-organized patterns on the thin PS film along with Marangoni flow is the driving force behind the circular ring formation of the carbon nanotubes without any external physical method. Toroidal or circular ring carbon nanotubes are unique structure of interesting properties. These surface structures can be of great use in biomedical purposes like skin grafting, sensors, superhydrophobic coating and others.

Biography:

Surita Basu is doing her Ph.D in ‘Patterning in Thin Film’ from Indian Institute of Technology Delhi. The work extensively involves fabrication of thin film and create instability on the surface of the film to undergo spontaneous self-organization of the film to form patterns on the surface. Another part of the research involves pattern directed self-assembly of nanoparticles over the patterned thin film. She has done her B.Tech in Polymer Science & Technology from Calcutta University and M.Tech in



Nanoscience & Technology from Guru Gobind Singh Indraprastha University. She has worked in various industries for 5 years. She has three publication in reputed international journals and had attended various International and national conferences.

Publication of speakers:

1. Novel methods for liposome preparation. Patil YP, Jadhav S. Chem Phys Lipids. 2014 Jan;177:8-18. doi: 10.1016/j.chemphyslip.2013.10.011. Epub 2013 Nov 9.
2. Prospects and issues of integration of co-combustion of solid fuels (coal and biomass) in chemical looping technology. Bhui B, Vairakannu P. J Environ Manage. 2019 Feb 1;231:1241-1256. doi: 10.1016/j.jenvman.2018.10.092. Epub 2018 Nov 21.
3. Electrospinning: a fascinating fiber fabrication technique. Bhardwaj N, Kundu SC. Biotechnol Adv. 2010 May-Jun;28(3):325-47. doi: 10.1016/j.biotechadv.2010.01.004. Epub 2010 Jan 25.
4. Recent advances in synthetic biology of cyanobacteria. Sengupta A, Pakrasi HB, Wangikar PP. Appl Microbiol Biotechnol. 2018 Jul;102(13):5457-5471. doi: 10.1007/s00253-018-9046-x. Epub 2018 May 9.
5. Cyanobacterial pigments: Perspectives and biotechnological approaches. Saini DK, Pabbi S, Shukla P. Food Chem Toxicol. 2018 Oct;120:616-624. doi: 10.1016/j.fct.2018.08.002. Epub 2018 Aug 2.

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