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**Dr. Subramanyan N. Varanakkottu** is currently a faculty at the School of Nano Science and Technology, National Institute of Technology, Calicut, India. He was awarded with prestigious INSPIRE faculty award and research grant by the Department of Science and Technology, India in 2016. Prior to joining at NIT Calicut, he worked as a post-doctoral researcher at École Normale Supérieure (ENS), Paris with Prof. Damien Baigl. Dr. Subramanyan completed his Ph.D. in Physics (Dr. rer. nat.) under the guidance of Prof. Steffen Hardt, Center of Smart Interfaces (Cluster of Excellence), Technical University of Darmstadt, Germany. He received MPhil Physics degree from Cochin University of Science and Technology, and MSc Physics degree from Kannur University, India. His research interests include light-controlled soft-matter physics, optofluidics and all-optical modulators using nanostructured materials.

**Title-** ***Bubble-mediated capillary interaction platform: Reconfigurable transport and assembly of floating objects***

A programmable fluid-fluid interface is a powerful platform for realizing many potential applications in the field of microfluidics, drug delivery, tunable optical components and display devices. The most fundamental challenge is to realize a reliable method capable of on-demand delivery and organization of functional components (solid objects or liquid drops) at the desired position. An ideal strategy should be able to perform transport/assembly in a reconfigurable manner under isothermal conditions, also should be free from the addition of chemicals. In this talk, I will present an overview of stimuli-controlled particle manipulation with an emphasis on our recent results on reconfigurable particle assembly/transport using bubble mediated capillary interactions. The method is capable of long-range transport, assembly and on-demand disassembly of floating objects at the water-air interface, by simply controlling the dynamics of the air bubble. Since capillarity driven assembly is applicable for microscale objects as well, the method presented could prove effective for the tunable patterning/assembly of smaller objects, in a reconfigurable manner.

**References:**


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