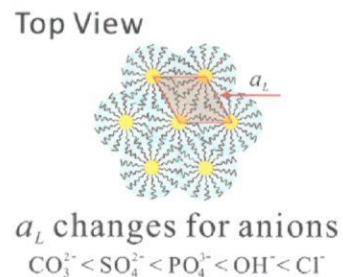
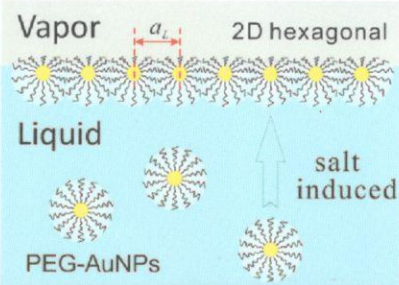
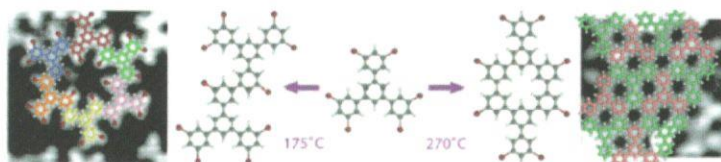
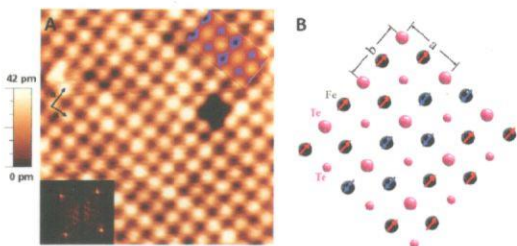
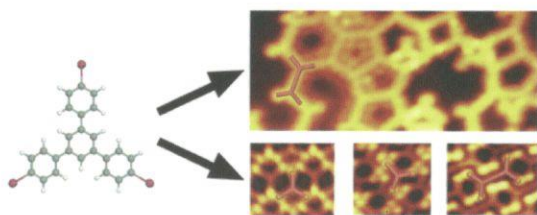


EMN MEETING

EMN Greece Meeting 2018
 Energy Materials Nanotechnology
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Program & Abstracts



A34: The Creation and the Annihilation Operators Acting on Anyon's Knots in the Frame of the Topological Quantum Computing

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The present paper aims to introduce a new algebra based on the knots and their ability to change dramatically the physical state, when we act on them with the braiding operator. The frame of all this ideas is the topological quantum computing. Nowadays, the quest for a reliable quantum computer technology refers, among others quantum phenomena, to the Quantum Hall Effect. Setting suitable quantum experiments (for instance a super lattice - two dimensional electron system that appears in the hetero structures of two semiconductors) involving exceptionally strong magnetic fields and very low temperatures, the QHE puts into evidence new quasi particles, evolving in 2+1 dimensions space. Such a topological quantum computer will successfully fight against the undesirable interaction between the quantum system and the environment (de-coherence). The knotted quantum world-lines of quasi-particles (anyons) provide the quantum computing physical support. The necessary algebra (which will deal with such physical supports) is the algebra of the creation and annihilation of the knot's braids when the corresponding braiding operators act.

A35: New Trends in Optical Communications

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The presentation starts with the importance of optical communication networks and their maps around globe. This is followed by definitions of light, optics, optical communications and its types. The main components of the optical fiber communication systems are explained including the optical amplifier and fiber Bragg grating (FBG) which are considered as a revolution in this field. Different multiplexing techniques are explained to increase the network capacity reaching to the Fiber-To-The-Home (FTTH). The free space optics (FSO) system is defined and introduced leading to visible light communications (VLC) in indoor and outdoor applications. The general ideas of fiberscopes are illustrated in medical and industrial applications.

Some videos are provided to help understanding the main concepts, including, fiber cables, Alcatel fiber systems and networks, fiber repairing, laser concept an FSO, and VLC and its applications.