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**“Magnetic properties of C<sub>60</sub>-based polymers”.**

**Abstract**

The newly discovered magnetic phase of the 2-dimensional rhombohedral C<sub>60</sub>-based polymer is introduced and the nature of its magnetism is discussed. It is proposed that the observed magnetism is associated with structural defects the latter appearing to define a new class of magnetic materials (A.N.Andriotis et al, Phys. Rev. Lett., **90**, 026801 (2003)).

**“Transport properties of Carbon- and Silicon-based nanotubes”.**

**Abstract**

The transport properties of simple and branched single-wall Carbon-based nanotubes (SWCNs) are discussed. It will be shown that zig-zag symmetric Y-shaped SWCNs exhibit ballistic switching and rectification properties when biased appropriately. (A.N.Andriotis et al, Phys. Rev. Lett., . **87**, 066802 (2001) ; *ibid* , **91**, 145501 (2003);). This study is extended to Si-based nanotubes stabilized by the encapsulation of transition metal atoms (Nanoletters, **2**, 301 (2002)).