

CREOSA SEMINAR ANNOUNCEMENT



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Ain Shams University, Cairo, Egypt

Thursday, March 26, 2009

11:00 a.m. – 12:00 p.m.

LUNA MISHOE SCIENCE CENTER, S205 (Lecture Hall)

THE EFFECT OF STRUCTURE ON THERMAL EXPANSION, MAGNETIC, BIOLOGICAL ACTIVITY AND MICROSTRUCTURAL PROPERTIES OF MATERIALS

There is a reciprocity between structure and properties, we do not know who is the more effective on the other but it is normal to say that if the structure of any material changes then accordingly its properties is changing and vice versa, in this talk we will concentrate on 4 properties; the thermal expansion, the magnetic properties, the bioactivities, the crystallite size and microstrain. The linear thermal expansion coefficients are indication of interatomic and intermolecular forces. They vary with crystallographic directions, temperature, impurities, vacant site, spin orientation and electronic transition. Different polymorphs of the same substance have different thermal expansion. Magnetic properties depend very much on the Crystal structure and spin orientation structure. Any minor change in crystal structure, caused for example by phase transition or by adding small amount of impurities, will lead to dramatic change in the magnetic properties. Biologically active drugs are also dependant on the structure; the activities vary with minor changes in the structure even if this change is in the bond length of certain atomic bonds. Microstructural Properties means Crystallite size and strain, they are very much affected by the structure. Different examples are going to be discussed in this presentation.