J Material Sci Eng 2015, 4:3
http://dx.doi.org/10.4172/2169-0022.C1.032

OMICS International
conferenceseries.com

International Conference and Exhibition on
Mesoscopic & Condensed Matter Physics
June 22-24, 2015 Boston, USA

Weak field magnetic susceptibility fluctuations of $Y_3Ba_5Cu_8$-$x^{Fe}x^{O}18$ ($0.0597 \leq x \leq 0.1255$) superconductor above the superconducting transition

Iván Supelano García
Technological University of Colombia, Colombia

In the so-called weak magnetic field limit, the excess of magnetization is associated with the fluctuations of the vortex lines positions. In this work, we present a study of magnetic susceptibility fluctuations in the limit of weak magnetic fields for $Y_3Ba_4Cu_8$-$x^{Fe}x^{O}18$ ($0.0597 \leq x \leq 0.1255$) high temperature superconductor system. Samples were synthesized by the standard solid-state reaction. For the fluctuation analysis, we use the concept of excess of magnetization, based on the Lawrence-Doniach model which allowed calculating the diamagnetism induced by thermal fluctuations in the normal state in the vicinities of critical temperature Tc0. The best adjustment in the experimental data, in the limit of weak magnetic field, of Δχ/Tin function of the reduced temperature allowed to obtain the values of critical parameters: BLD (LD parameter), AS (diamagnetism of Schmidt), *ξab*(0) (correlation length in *ab* plane) and ξc(0) (correlation length in *c* direction) in each one of the samples for 2D fluctuation regime.

ivan.supelano@uptc.edu.co

Dynamical thermal conductivity of AA-stacked biased and doped bilayer graphene: Green's function approach

Rezania, Hamed[1] and Yarmohammadi Mohsen[2]
[1]University of Razi, Iran
[2]Institute for Advanced Studies in Basic Sciences (IASBS), Iran

We investigate the dynamical thermal conductivity (**κ**) of clean AA-stacked bilayer graphene sheets as a function of frequency for doping due to charging and also the effect of adding a bias across the layers. Recently increasing importance of thermal properties of materials is explained both by practical needs and fundamental science. Heat removal has become a crucial issue for continuing progress in electronic industry owing to increased levels of dissipated power. Thermal properties of materials change when they are structured on a nanometer scale. Graphene transistors and interconnects benefit from the high in-plane thermal conductivity, up to a certain channel length. According to our results, there is a maximum value in the plot of **κ** versus bias potential ***V*** for various temperatures ***T*** and frequencies ω and a slight decreasing for different chemical potential ***μ***. Also we have obtained the temperature dependence of κ for different frequencies, chemical and bias potentials, that we saw a dramatically decrease in all of them. The plot of κ versus chemical potential leads to a minimum value for **κ** at **μ > t||** (in-plane hopping) for different ***T*** and ***V***.

m.yarmohammadi69@gmail.com