

# INTERNATIONAL CONFERENCE ON PHYSICS - 2016

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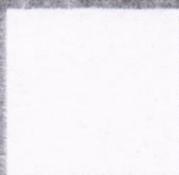
*Theme:*

**Physics: Truth, Beauty and Relevance**

## PROGRAMME & ABSTRACTS

*Venue:*

Atomic Energy Centre, Dhaka



**Organized by  
Bangladesh Physical Society**

dependence of the  $\tan\delta$  with frequency at different treatment times and discharge powers for all the jute samples show small relaxation peaks at the very low frequency region. The values of  $\tan\delta$  decrease with the increases of both plasma treatment times and discharge powers. Also, the relaxation peaks shifted to the higher frequency region as the plasma treatment times as well as discharge power increases. At low frequencies relaxation peaks indicates the possibility for the interfacial polarization.

### PP-06: Sintering Densification, Mechanical and Electrical Properties of $\text{Al}_2\text{O}_3$ -30wt.% $\text{ZrO}_2$ Doped with MgO and $\text{TiO}_2$

S. Akter, M. J. Abden<sup>1</sup>, M. S. S. Chowdhury<sup>2</sup>, M. K. Islam<sup>3</sup>, A. Huda, A. Parveen<sup>4</sup> and M. M. Haque<sup>4</sup>

Department of Physics, Jagannath University, Dhaka-1100, Bangladesh

<sup>1</sup>Department of Electrical and Electronic Engineering, International Islamic University Chittagong, Chittagong

<sup>2</sup>Nuclear Power & Energy Division, Bangladesh Atomic Energy Commission, Dhaka-1207, Bangladesh

<sup>3</sup>Department of Electrical and Electronic Engineering, BUET, Dhaka-1000, Bangladesh

<sup>4</sup>Materials Science Division, Atomic Energy Centre, Dhaka-1000, Bangladesh

E-mail: mahbub405@yahoo.com

Mechanical properties of composites are affected by the shapes, sizes and relative density of bulk-grains which are much dependent on doping condition, doping materials, sintering temperatures etc. Recent advancement in material science makes it possible to obtain Nano-grained structures of such composite which has attracted much attention of Nano-material researchers. In this work, the composite  $\text{Al}_2\text{O}_3$ - $\text{ZrO}_2$ , a composite of Alumina ( $\text{Al}_2\text{O}_3$ ) and Zirconia ( $\text{ZrO}_2$ ) which possess excellent mechanical properties including improved hardness, toughness and bending strength, has been doped with Magnesium Oxide (MgO) and Titanium-oxide ( $\text{TiO}_2$ ) at different wt%. The sintering temperature was kept fixed as  $1600^\circ\text{C}$  for each composite. Since MgO and  $\text{TiO}_2$  possess low dielectric losses, electrical properties of these composites have also been observed along with mechanical and morphological properties. The result shows that the average grain size decreases with increase in additive different wt.% of MgO and  $\text{TiO}_2$ . The hardness and flexural strength of the composite tends to increase with the additive different wt.%. The electrical properties (dielectric constant, resistivity and conductivity etc.) also vary with the different wt.% of MgO and  $\text{TiO}_2$ .

### PP-07: Estimation of Pesticide Residue in Water and Vegetables of Rooppur Nuclear Power Plant Area

M. I. Ali<sup>1</sup>, M. O. Rahman<sup>1</sup>, M. Khan<sup>2</sup> and S. Aktar<sup>2</sup>

<sup>1</sup>Department of Physics, Jahangirnagar University, Saver, Dhaka, Bangladesh

<sup>2</sup>Designated Reference Institute for Chemical Measurements, BCSIR, Bangladesh

E-mail: idris448@gmail.com

This article describes the comparison of different technique of rapid and low cost sample preparation approach for the determination of pesticide residues in water and vegetables collected from Rooppur Nuclear Power Plant site area using Gas Chromatography (GC-ECD). In both GC/MS and LC/MS-MS analysis sample tested from 15gm to 50gm in Potato, Tomato, Brinjal, Cabbage spiked with 09 pesticides, as expected, the results were excellent (overall average of 95% recoveries with 10% RSD) using all three versions, except the unbuffered method got somewhat lower recoveries for pH dependent pesticides. The different methods worked equally well for all matrices tested with equivalent amounts of matrix co-extractives measured, matrix effects on quantification and chemical noise from matrix in chromatographic background. The acetate buffered versions gave higher and more consistent recoveries for anhydrous Na acetate. None of the versions consistently worked well for chlorothalonil in vegetables, but the acetate buffered method gave better results for screening of those pesticides. Alternatively, acetonitrile (MeCN) ethyl acetate (EtOAc) was evaluated as a substitute solvent in the acetate buffered QuEChERS method, but it generally led to less clean extracts and lower recoveries of (some pesticide). In summary, the acetate buffered version of QuEChERS using MeCN exhibited advantages compared to the other tested methods in the study.