12.10.2011	**Anadolu University, Yunusemre Campus–Congress Center/Room Blue**
Session 1	**ENGINEERING CERAMICS**
09:00 – 09:15	"Dewatering Performance of Capillary Ceramic Filters" **O.ŞAN**, C.ÖZGÜR, B.AKIN, E. CANDAN
09:15 – 09:30	"Environmental Friendly Products Contain Hexagonal Boron Nitride" **G. M. AY**, N. AY
09:30 – 10:00	"Processing Issues, Microstructural Control and Properties of Carbon Nanotube Reinforced Alumina Ceramics for Various Applications" **C. KAYA (INVITED)**
10:00 – 10:15	"Sintering Behaviour and Mechanical Property Investigations of SiC Reinforced Cr_3C_2-NiCr Cermets" **A.ÖZER**
10:15 – 10:30	"A General Formulation for Strength Prediction of Advanced Ceramics by Ball on There Balls (B_3B) Test with Different Multiaxial Criteria" **S. NOHUT**
10:30 – 11:00	Tea-Coffee Break
11:00 – 11:15	"Ceramic Filter Production of Seydişehir Alumina" **E. ÇELİK**, B. N. ÇETİNER, Z.E.ERKMEN
11:15 – 11:30	"Investigation of the Production of β-Al_2O_3 from Seydişehir α-Al_2O_3" **S. ENGÜRLÜ**, Z. TAŞLIÇUKUR, N. KUŞKONMAZ
11:30 – 12:00	"Characterization Investigations of Some Boride Based Powder and Sintered Composides Mechanochemically Synthesized Using Elementel Powders" **L. ÖVEÇOĞLU (INVITED)**
12:00 – 12:30	"Stable Fracture Testing for Toughness Characterization of Ceramics" **C. BAUDIN (INVITED)**
12:30– 12:45	"Atomic scale Microstructure-Property Relationship in SiAlON" **S. TURAN**, N. C. AÇIKBAŞ, H. YURDAKUL, H. MANDAL, F. KARA, A. KARA
12:45 – 13:00	"Effect of Starting Materials on Carbothermal Reduction and Nitridation of Silica" **B. TARHAN**, H. MANDAL, F. KARA
13:00 – 14:00	Lunch

Atomic scale Microstructure-Property Relationship in SiAlON

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Abstract

Recent developments such as aberration correction in scanning transmission electron microscopy (STEM) resulted in the observations of individual atoms of the crystal lattices. This technique can be applied to materials like SiAlON containing different dopants to understand the relationship between whereabouts of dopants (i.e., the microstructure) with the properties of the bulk material. In this study, two different dopant were selected to understand the effect of large and small cations on the microstructure and hence on the properties. The composition was designed and the powders were milled together, dried, pressed into pellets and finally sintered under gas pressure. Transmission electron microscopy (TEM) samples were prepared through conventional method of cutting, grinding, polishing then ion beam thinning and investigated by using either a TEM or a STEM to identify the positions of atoms in the microstructure. In this work, the microstructure investigations of SiAlON materials will be illustrated and related to the properties of the materials. This research was supported by The Scientific and Technological Research Council of Turkey (TUBITAK) 2214-International Doctoral Research Fellowship Program (H.Y.) and DOE Materials Science and Engineering Division. We also would like to thank MDA Advanced Ceramics (Eskisehir, Turkey) for the provision of the samples.