



Thai Ceramic Society  
Materials Science Department,  
Faculty of Science,  
Chulalongkorn University,  
Phayathai Road, Pathumwan District  
Bangkok, THAILAND

June 20, 2019

Prof. Dr. Cengiz KAYA  
Director, Research and Graduate Policies  
Faculty of Engineering and Natural Sciences  
Sabancı University, Turkey

Dear Prof. Dr. Cengiz KAYA,

On behalf of the organizing committee, I am writing to invite you to attend and give a presentation as an invited speaker in **the 5<sup>th</sup> International Conference on Traditional and Advanced Ceramics (ICTA2019)**. The aim of the conference is to serve as a forum for participants from academia, government agencies and industry to report on research and development results, to interact, and to identify opportunities for cooperation in the fields of ceramics science and technology.

ICTA2019 will be held on August 28-29, 2019 at IMPACT Forum, Muang Thong Thani, Thailand. The conference will be held in conjunction with ASEAN Ceramics 2019 and the 8<sup>th</sup> Asia-Oceania Ceramic Federation Conference (AOCF-8). Therefore, we would like to extend an invitation to you as an invited speaker on the topic entitled "**Nano Boron Carbide (B4C) reinforced Polymer Matrix Composites for Shielding and Engineering Applications: Issues and Challenges**". If you require more information, please visit our conference website at <https://www.mtec.or.th/icta2019/>

Thank you very much in advance for your kind support. We do hope you will be able to participate in the ICTA2019 and look forward to hearing from you soon.

Yours sincerely,

(Dr. Somnuk Sirisoonthorn)  
President of TCS and Chairman of ICTA2019

## Advanced Ceramics

### Nano Boron Carbide (B<sub>4</sub>C) Reinforced Polymer Matrix Composites for Shielding and Engineering Applications: Issues and Challenges

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High purity nano/micro boron carbide (B<sub>4</sub>C) structures with various morphologies were synthesized using a modified sol gel technique in an attempt to control size, purity, crystallinity and phase content using different starting chemicals and processing conditions. The obtained B<sub>4</sub>C structures were first surface functionalized with different agents and then distributed within low density polyethylene. Polymer matrix composites plates containing different amount of boron carbide particles were manufactured using warm pressing. Shielding and mechanical properties of the final composite plates were reported in detail. Issues related with synthesis of pure boron carbide and obtaining composites plates containing homogeneously distributed boron carbide particles were discussed and effective solutions were also presented. Overall, it is shown that there is a close relationship between B<sub>4</sub>C loading and both shielding and mechanical properties of shaped composite plates. It is considered that the new combined technique described in the present work is cost effective as well as rapid way of obtaining new generation of low-weight shielding materials. It is also shown that as the amount of B<sub>4</sub>C is increased better shielding properties are achievable.

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