

## Effect of Graphite Filler Loading Concentration on Physical and Mechanical Properties of Epoxy Matrix Composites

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### Abstract

The addition of filler materials to a polymer is a common practice to improve not only strength, stiffness, toughness, hardness, conductivity, wear resistance, and mold shrinkage but also reduces the processing cost significantly. Graphite has very weak bonds between the sheets and this structure makes graphite excellent dry lubricant. On the other hand graphite based polymer composites provides high electrical conductivity for using electromagnetic shielding, batteries, light emitting devices etc. Graphite reinforced composites have exceptional mechanical properties such as high stiffness, strength and light weight.

The main objective of this study is the use of graphite as a filler in epoxy matrices in order to reduce resin cost and improve mechanical properties. The effect of graphite content on physical properties and mechanical properties such as hardness, bending strength and elastic modulus was evaluated. The characterization of graphite filler was carried out by scanning electron microscopy (SEM) and X-ray diffraction (XRD) techniques. The results show that addition of 40 wt.% of graphite is optimum content for casting. The results revealed that bulk density increase and open porosity decrease with the addition of graphite content. Up to 40 wt.% of graphite loading, bending strength showed enhancement and then slightly decrease. Hardness values increase with the addition of graphite content.

**Keywords:** epoxy; graphite; bending strength; elastic modulus; hardness

Poster Presentation



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Bilimsel Program

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Kayıt Konaklama

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25 August 2014

Dear


Nurcan Çalış Açıkbaz, "Effect of Graphite Filler Loading Concentration on Physical and Mechanical Properties of Epoxy Matrix Composites"

With the assistance of Anadolu University, Turkish Ceramic Society organizes **SERES'14 'III. International Ceramic, Glass, Porcelain Enamel, Glaze and Pigment Congress'** which aims to bring academicians, artists, designers in the fields of ceramic, glass, porcelain enamel, glaze, and pigment and people of regarded industries together, supplying them suitable arena for sharing knowledge and experiences and for determining possible future collaborations with its wide range of coverage. SERES'14 will be held on the 15-17 October 2014 in Anadolu University, Yunusemre Campus, Eskisehir/Turkey. During the congress, several workshops and exhibitions will be organised. Latest news about the Congress and the details about the subjects covered can be followed by our web site: <http://www.seres2014.org/>. Please also note that the official language of SERES'14 is English.

On behalf of the Organising Committee, I am glad to inform that the abstract you have kindly submitted to SERES 2014 has been accepted as POSTER presentation. Please complete your early bird registration before 1st of September. If you would like to publish the full length paper in the congress proceedings, please submit us before 10th of October.

We are looking forward to meeting you in Eskişehir.

Sincerely yours



On behalf of Organising Committee  
Prof. Dr. Alpagut KARA (Chairman)

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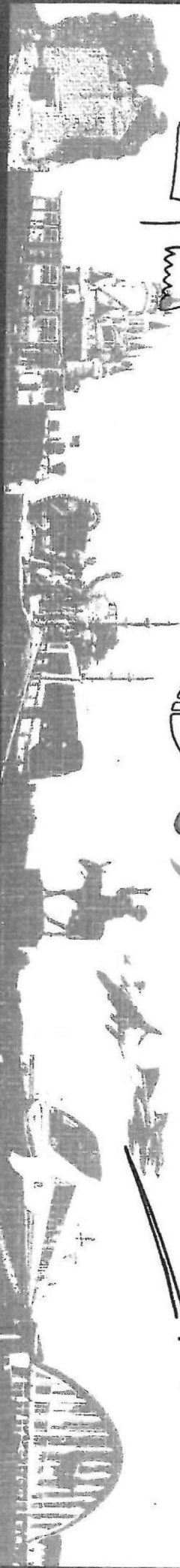
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*for the attendance and valuable contribution as a poster presentation  
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