Invitation to Review for Polymer Composites, PC-13-1638

onbehalfof+scase+vt.edu@manuscriptcentral.com on behalf of scase@vt.edu

Sun 11/3/2013 12:58 PM

Reviewing Activity

To:Mohamed Eldessouki <eldesmo@tigermail.auburn.edu>;

03-Nov-2013

Dear Dr. Eldessouki,

Manuscript ID PC-13-1638 entitled "Modified Interfacial Mechanics of ZnO Micro-rod Reinforcement in Ultra High Molecular Weight Polyethylene Biocomposite", by Sharma, Rajeev; Balani, Kantesh, has been submitted to Polymer Composites.

I invite you to review this manuscript. The abstract appears at the end of this letter, along with the names of the authors. Please let me know within 5 days if you will be able to review this paper. If you are unable to review this paper, would you take a moment to please recommend one or two other possible referees with expertise in this area?

If you do choose to review this manuscript, please indicate your acceptance by clicking, "Agree", via email below.

Agreed via Email: http://mc.manuscriptcentral.com/pc?URL_MASK=b78afe4bb7324bd8a2e89e32ceb94c40

Decline via Email: http://mc.manuscriptcentral.com/pc?URL_MASK=956fe36832ff40b0a075eea2d2198757

Unavailable via Email: http://mc.manuscriptcentral.com/pc?URL_MASK=168379da9a35435ca04eb682123f312e

After you accept, you can click the below website:
Site URL: http://mc.manuscriptcentral.com/pc

and login using:
Your User ID:
Your Password: Your Password:

Please then select the "Review Center" option (if additional personal information is not requested), and you can access the manuscript via HTML or PDF formats. All comments should either be entered directly into the website, or by uploading a document, per your preference.

I would hope that you complete your review within few weeks. Please know that and the authors and I appreciate your service.

Sincerely,

Prof. Scott Case
Scott W. Case
Associate Editor - Polymer Composites Journal

Professor and Associate Department Head

Engineering Science and Mechanics
College of Engineering
Virginia Tech
225A Norris Hall
Blacksburg, VA 24061
Phone: (540) 231-3140
http://www.esm.vt.edu

MANUSCRIPT DETAILS

TITLE:
Modified Interfacial Mechanics of ZnO Micro-rod Reinforcement in Ultra High Molecular Weight Polyethylene Biocomposite

AUTHORS:
Sharma, Rajeev; Balani, Kantesh

ABSTRACT:
ZnO is well known antibacterial material and Ultra High Molecular Weight Polyethylene (UHMWPE) is one of the most promising materials for cartilage replacement as acetabular cup liner. In this work, ZnO micro-rods were incorporated (5, 10, 15, 20 wt. % (0.87, 1.80, 2.88, 4.03 vol. %)) in UHMWPE matrix and successively compression molded. The yield strength of UHMWPE-ZnO composites was observed to be similar (15-17 MPa) as that of pure UHMWPE though the tensile strength, ductility (% elongation at break), toughness and Young's modulus of the ZnO(R)-UHMWPE composites has decreased with filler content by 53.4%,74.5%, 55.3% and 8.8 % respectively. The overestimation of Young's modulus (by up to 40 %) of UHMWPE-ZnO biocomposite modeled using Halpin-Tsai equation was attributed to poor interfacial bonding. Thus, an interfacial porosity factor was introduced in the modified Halpin Tsai equation, which rendered Young's modulus estimation within ±2.5 % error for UHMWPE-ZnO polymeric biocomposites.