Journals Books Sign in Help

Brought to you by:
Princeton University Library

Journal of the Mechanical Behavior of Biomedical Materials

Volume 49, September 2015, Pages 118–128

Research Paper

Mechanical and hyperthermic properties of magnetic nanocomposites for biomedical applications

Kwabena Kan-Dapaah[a, b, c], Nima Rahbar[c], Abdullahi Tahlil[c], David Crosson[c], Nan Yao[d], Wole Soboyejo[a, d, e]

Show more

Choose an option to locate/access this article:

Find it@PUL

Get Full Text Elsewhere

doi:10.1016/j.jmbbm.2015.04.023

Get rights and content

Highlights

- Magnetic nanoparticle (γ-Fe_2O_3) filled poly-dimethylsiloxane nanocomposites were fabricated using soft lithography method.
- Their mechanical and hyperthermic properties were studied as a function of the weight fraction of γ-Fe_2O_3.
- Increasing weight fraction of γ-Fe_2O_3 increases Young's modulus but decreases strength.
- Heat generation within alternating magnetic field increases with weight fraction of γ-Fe_2O_3.
- These enhanced properties can be exploited for the development of biomedical devices such as lab-on chip and hyperthermic thermoseeds/probes.

Abstract

Export Search ScienceDirect Advanced search

tudy the mechanical and hyperthermic properties of magnetic -filled PDMS composites for biomedical applications. These are of the weight of MNP, γ-Fe_2O_3. The results showed the effects on and specific losses in a magnetic field. The measured Young's reement with the moduli predicted from the Bergström–Boybce s calculated from magnetic measurements are used to predict the -vivo conditions. The implications of the results were discussed for in biomedical devices

Figures and tables

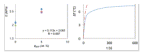


Table 1

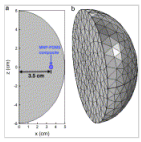
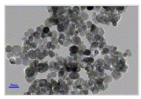


Table 2



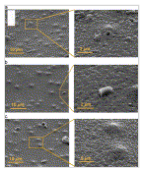
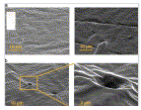
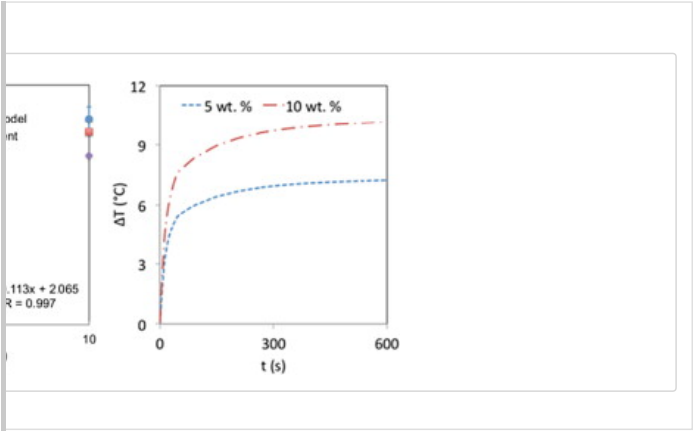


Table 3





es; Biomedical devices; Magnetic nanocomposites;

at: Department of Mechanical and Aerospace Engineering, Princeton University, USA.

Ltd. All rights reserved.

Recommended articles

Mechanical behavior of a notched oxide/oxide cera…
2015, Composite Structures more

Sintering and the mechanical properties of the trical…
2015, Journal of the Mechanical Behavior of Biomedical M… more

Mechanical, thermal and bio-compatibility studies of…
2015, Journal of the Mechanical Behavior of Biomedical M… more

View more articles »

Citing articles (0)

Related book content

About ScienceDirect
Terms and conditions
Contact and support
Privacy policy

Copyright © 2016 Elsevier B.V. or its licensors or contributors. ScienceDirect® is a registered Elsevier B.V.

Cookies are used by this site. To decline or learn more, visit our Cookies page.

Switch to Mobile Site