

Accepted Manuscript

Soft, hyper-elastic and highly-stable silicone-organo-clay dielectric elastomer for energy harvesting and actuation applications

Gregorio Bocalero, Claire Jean-Mistral, Maila Castellano, Corrado Boragno



PII: S1359-8368(18)30161-6

DOI: [10.1016/j.compositesb.2018.03.021](https://doi.org/10.1016/j.compositesb.2018.03.021)

Reference: JCOMB 5580

To appear in: *Composites Part B*

Received Date: 14 January 2018

Accepted Date: 13 March 2018

Please cite this article as: Bocalero G, Jean-Mistral C, Castellano M, Boragno C, Soft, hyper-elastic and highly-stable silicone-organo-clay dielectric elastomer for energy harvesting and actuation applications, *Composites Part B* (2018), doi: 10.1016/j.compositesb.2018.03.021.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Soft, hyper-elastic and highly-stable silicone-organo-clay dielectric elastomer for energy harvesting and actuation applications

Gregorio Boccalero^{a,b,*}, Claire Jean-Mistral^c, Maila Castellano^b, Corrado Boragno^a

^aDepartment of Physic, University of Genova, via Dodecaneso 33, 16146, Genova, Italy

^bDepartment of Chemistry and Industrial Chemistry, University of Genova, via Dodecaneso 31, 16146, Genova, Italy

^cLaboratoire de Mecanique des Contacts et des Structures, LaMCoS, University of Lyon, 18-20 rue de la science, 69621, Villeurbanne, France.

Abstract:

A new type of soft composite is archived by the use of two grade of commercially available Pt-catalyzed silicone elastomers and organic nanoclays (montmorillonite). A complete characterization underlines their attractive performances: lower Young modulus, higher dielectric permittivity, but without compromising important properties such as low dielectric losses and lower viscous losses, higher dielectric breakdown strength, and thereby maintaining the mechanical integrity of the elastomers. A figure of merit is introduced to compare all the innovative synthesized soft composites, characterized by a bimodal network. These achievements can be exploited for both the actuation and the energy generation purposes.

Keywords: A. Polymer-matrix composites (PMCs); A. Smart materials; B. Mechanical properties; B. Electrical properties.

* Corresponding author; Email: gre.boc@gmail.com.

Download English Version:

<https://daneshyari.com/en/article/7211961>

Download Persian Version:

<https://daneshyari.com/article/7211961>

[Daneshyari.com](https://daneshyari.com)