

# Web of Science

## Magnetodeformation and elastic properties of ferrogels and ferroelastomers

By: Zubarev, AY (Zubarev, A. Yu.)<sup>[1]</sup>; Elkady, AS (Elkady, Ashraf S.)<sup>[2,3]</sup>

[View ResearcherID and ORCID](#)

PHYSICA A-STATISTICAL MECHANICS AND ITS APPLICATIONS

Volume: 413 Pages: 400-408  
 DOI: 10.1016/j.physa.2014.06.046  
 Published: NOV 1 2014  
[View Journal Impact](#)

### Abstract

The work deals with a theoretical study of magnetoelastic properties of soft composite materials, consisting of a polymer matrix filled with micron-sized magnetizable particles (ferrogels and ferroelastomers). The systems with a homogeneous gas-like spatial distribution of particles in the matrix are considered. The impact of the particles magnetic interaction on the macroscopic elastic characteristics of the composites is studied. Analysis shows that this interaction increases elastic moduli of the materials. This effect must be especially significant for the composites with soft gel matrix. (C) 2014 Published by Elsevier B.V.

### Keywords

**Author Keywords:** Ferrogels; Magnetodeformation; Elastic modules  
**KeyWords Plus:** MAGNETIC-FIELD; DEMAGNETIZING FACTORS; SPHERICAL-PARTICLES; BULK STRESS; ELASTOMERS; DEFORMATION; SUSPENSION; COMPOSITE; MODEL

### Author Information

**Reprint Address:** Zubarev, AY (reprint author)  
 + Urals Fed Univ, Lenina Ave 51, Ekaterinburg 620083, Russia.  
**Addresses:**  
 + [ 1 ] Urals Fed Univ, Ekaterinburg 620083, Russia  
 + [ 2 ] King Abdulaziz Univ, Fac Sci, Dept Phys, Jeddah, Saudi Arabia  
 [ 3 ] EAEA, Cairo, Egypt  
**E-mail Addresses:** [andrey.zubarev@usu.ru](mailto:andrey.zubarev@usu.ru)

### Funding

Funding Agency	Grant Number
Russian Scientific Fund	14-19-00989

[View funding text](#)

### Publisher

ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS

### Categories / Classification

**Research Areas:** Physics  
**Web of Science Categories:** Physics, Multidisciplinary

### Document Information

**Document Type:** Article  
**Language:** English

## Citation Network

6 Times Cited  
 31 Cited References  
[View Related Records](#)  
[Create Citation Alert](#)  
*(data from Web of Science Core Collection)*

**All Times Cited Counts**  
 6 in All Databases  
 6 in Web of Science Core Collection  
 0 in BIOSIS Citation Index  
 0 in Chinese Science Citation Database  
 0 in Data Citation Index  
 0 in Russian Science Citation Index  
 0 in SciELO Citation Index

**Usage Count**  
 Last 180 Days: 1  
 Since 2013: 13  
[Learn more](#)

**Most Recent Citation**  
 Liu, Qimin. [Development of a Multiphysics Model to Characterize the Responsive Behavior of Magnetic-Sensitive Hydrogels with Finite Deformation](#). JOURNAL OF PHYSICAL CHEMISTRY B, JUN 8 2017.  
[View All](#)

**This record is from:**  
**Web of Science Core Collection**  
 - Science Citation Index Expanded

**Suggest a correction**  
 If you would like to improve the quality of the data in this record, please [suggest a correction](#).

**Accession Number:** WOS:000340977700043

**ISSN:** 0378-4371

**eISSN:** 1873-2119

### Journal Information

**Table of Contents:** [Current Contents Connect](#)

**Impact Factor:** [Journal Citation Reports](#)

### Other Information

**IDS Number:** AO0CW

**Cited References in Web of Science Core Collection:** **31**

**Times Cited in Web of Science Core Collection:** **6**

