

167.

Accession number:20113714327901

Title:3D fem modeling and technology of piezo-electric ring mems antenna

Authors:Massaro, A. (1); Cingolani, R. (1); Passaseo, A. (2)

Author affiliation:(1) IIT Italian Institute of Technology, Center of Bio-Molecular Nanotechnology, Arnesano, Italy; (2) National Nanotechnology Laboratory, Institute of Nanoscience of CNR, Lecce, Italy

Corresponding author:Massaro, A.(alessandro.massaro@iit.it)

Source title:Progress In Electromagnetics Research C

Abbreviated source title:Prog. Electromagn. Res. C

Volume:23

Issue date:2011

Publication year:2011

Pages:123-135

Language:English

ISSN:19378718

E-ISSN:15309681

Document type:Journal article (JA)

Publisher:Electromagnetics Academy, 77 Massachusetts Avenue, Room 26-305, Cambridge, MA 02139, United States

Abstract:Actually MEMS technology allows to fabricate free standing and bended cantilevers by acting on stress/strain properties and thicknesses of materials. In particular, by means of MEMS technology it is possible to realize ring or spiral layouts with piezoelectric materials. The mechanical movement due to the piezoelectric resonance can be used in order to modulate a signal travelling in the MEMS and radiating in the free space as happens in antennas. In this work we provide an accurate study regarding the design approach of piezoelectric aluminium nitride (AlN) ring antenna. The study is developed by means of a tailored 3D FEM tool which allows to analyze the piezoelectric resonances and to design the ring micro-antenna in the THz range. Finally we provide the technology and we measure the piezoelectric resonances of ring antennas.