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FORTH

## PUBLICATIONS

### Editor

#### 1. **Biomolecular Sensors**

Eds E. Gizeli, C.R. Lowe, Taylor & Francis, UK, 2002



#### 2. **pHealth 2016**

Eds N. Maglaveras, E. Gizeli, IOS Press, 2016

### Book Chapters

#### 1. **Handbook of Biosensors and Biochips**

Eds C.R. Lowe, D. Cullen, H.W. Weetall and I. Karube

K. Melzak, E. Gizeli "Love Wave Biosensors", John Wiley & Sons, 2007

#### 2. **High frequency acoustic wave devices for analyses of planar lipid bilayers**

Eds H.T. Tien & A. Ottava

K. Melzak, E. Gizeli "Advances in planar lipid bilayers and liposomes", Elsevier Academic Press, 2005

#### 3. **Biomolecular Sensors**

Eds E. Gizeli, C.R. Lowe

E. Gizeli "Acoustic Immunosensors", Taylor & Francis, UK, 2002

### Guest Editor

#### 1. **Sensing and Bio-Sensing Research**, Elsevier, Special issue on "Acoustic wave sensor technology for biophysical and bioanalytical studies", 2016

### Patents

#### 1. G. Papadaksi & E. Gizeli, **Measurement of analyte with an acoustic wave sensor**, UK Patent Application No. 1511687.4, 2015

#### 2. A. Tsortos, G. Papadakis, E. Gizeli, **Molecular conformation biosensing**, WO 2008/155692, EC2171083

#### 3. E. Gizeli and A.C. Stevenson "**Chemical sensor for detecting binding reactions**" WO9201931

### Peer reviewed articles (\*corresponding author)

#### 1. G. Papadakis, P. Palladino, D. Chronaki, A. Tsortos, E. Gizeli\*

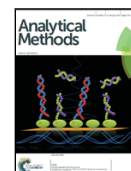
*Sample-to-answer acoustic detection of DNA in complex samples*; **Chemical Communications** (under revision)

#### 2. D. Millionsi, M. Velez, A. Tsortos, E. Gizeli\*

Extracting the shape and size of biomolecules attached to a surface as suspended discrete nano-particles; **Analytical Chemistry**, 2017, DOI: 10.1021/acs.analchem.7b00206.

3. G. Papadakis, JM. Friedt, M. Eck, D. Rabuc, G. Jobst, E. Gizeli\*  
*Optimized acoustic biochip integrated with microfluidics for biomarkers detection in molecular diagnostics; **Biomedical Microdevices** (accepted)*
4. D. Chronaki, D.I. Stratiotis, A. Tsortos, E. Anastasiadou, E. Gizeli\*  
*Screening between normal and cancer human thyroid cells through comparative adhesion studies using Quartz Crystal Microbalance technology; **Sensing and Bio-Sensing Research**, 2016, 11, 99-106*
5. A. Kordas, G. Papadakis, J. Champ, S. Descroix, E. Gizeli\*  
*Rapid Salmonella detection using an acoustic wave device combined with the RCA isothermal DNA amplification method; **Sensing and Bio-Sensing Research**, 2016, 11, 121-127*
6. A.S. Kastania, K. Tsougeni, G. Papadakis, E. Gizeli, G. Kokkoris, A. Tserepi, E. Gogolides  
*Plasma micro-nanotextured polymeric micromixer for DNA purification with high efficiency and dynamic range; **Analytical Chimica Acta**, 2016, 942, 58-67*
7. A.K. Pantazis, G. Konstantinidis, E. Gizeli\*  
*Study of the effect of the operating frequency of a GaN Lamb wave device to viscosity and protein Sensing; **IEEE Sensors Journal**, 2016, 16 (19), 7028-7036*
8. M. Gianneli, K. Tsougeni, A. Grammoustianou, A. Tserepi, E. Gogolides, E. Gizeli\*  
*Nanostructured PMMA-coated Love wave device as a platform for protein adsorption studies; **Sensors and Actuators B**, 2016, 236, 583-590*
9. A. Tsortos, G. Papadakis, E. Gizeli  
*On the hydrodynamic nature of DMA acoustic sensing; **Analytical Chemistry**, 2016, 88 (12), 6472-6478*
10. P. Mateos-Gil, A. Tsortos, M. Velez, E. Gizeli\*  
*Monitoring structural changes in intrinsically disordered proteins with QCM-D: Application to the bacterial cell division protein ZipA; **Chemical Communications**, 2016, 52, 6541-6544*
11. K. Tsougeni, G. Papadakis, M. Gianneli, A. Grammoustianou, V. Constantoudis, B. Dupuy, P. N. Petrou, S. E. Kakabakos, A. Tserepi, E. Gizeli, E. Gogolides  
*Plasma nanotextured polymeric lab-on-a-chip for highly efficient bacteria capture and lysis; **Lab on a Chip**, 2016, 16, 120-131*
12. G. Kaprou, G. Papadakis, D. P. Papageorgiou, G. Kokkoris, V. Papadopoulos, I. Kefala, E. Gizeli, A. Tserepi  
*Miniaturized devices for isothermal DNA amplification addressing DNA diagnostics; **Microsystem Technologies** 2015, DOI 10.1007/s00542-015-2750-x*
13. A. Tsortos, A. Grammoustianou, R. Lymbouridou, G. Papadakis, E. Gizeli\*  
*The detection of multiple DNA targets with a single probe using a conformation-sensitive acoustic sensor; **Chemical Communications**, 2015, 51, 11504-11507*
14. G. Papadakis, N. Skandalis, A. Dimopoulou, P. Glynos, E. Gizeli\*  
*Bacteria Murmur: Application of an acoustic biosensor for plant pathogen detection; **PLOS ONE**, 2015, 10 (7): e0132773*
15. K. Mitsakakis, A. Tsortos\*, Electra Gizeli\*  
*Quantitative determination of protein molecular weight with an acoustic sensor; significance of specific versus non-specific binding; **Analyst**, 2014, 139, 3918-3925*
16. V. Papadopoulos, I. Kefala, G. Kokkoris, G. Kaprou, D. Moschou, G. Papadakis, E. Gizeli, A. Tserepi  
*A passive micromixer for enzymatic digestion of DNA; **Microelectronic Engineering**, 2014, 124, 42-46*

- 17.** G.Papadakis\*, E. Gizeli\*,  
*Screening for mutations in BRCA1 and BRCA2 genes by measuring the acoustic ratio with QCM*  
**Analytical Methods** 2014, 6 (2) 363-371 ([Inside cover page](#))
- 18.** A.K. Pantazis, G. Konstantinidis, E. Gizeli\*  
*Characterization of a GaN Lamb-Wave Sensor for Liquid-Based Mass Sensing Applications; IEEE Sensors Journal* 2014, 14 (3), 908-911
- 19.** G. Papadakis, A Tsortos, A. Kordas, I. Tiniakou, E. Morou, J. Vontas, D. Kardassis, E. Gizeli\*  
*Acoustic detection of DNA conformation in genetic assays combined with PCR; Scientific Reports* 2013, 3:2033, DOI: 10.1038 ([Press report](#))
- 20.** K.A. Melzak, S.A. Melzak, E. Gizeli, J.L.Toca-Herrera,  
*Cholesterol ordering in phosphatidylcholine liposomes: a surface plasmon resonance study*  
**Materials** 2012, 5 (11), 2306-2325 ([Invited](#), Special Issue on Supported Lipid Membranes)
- 21.** G. Papadakis, E. Gizeli  
*In silico search of DNA drugs targeting oncogenes*  
**IEEE/ACM Transactions on Computational Biology and Bioinformatics** 2012, 9 (6), 1826-1830
- 22.** K. Mitsakakis, S. Sekula-Neuner, S. Lenhert. H. Fucks, E. Gizeli\*  
*Convergence of Dip-Pen Lithography and acoustic biosensors towards a rapid-analysis multi-sample microsystem; Analyst*, 2012, 137, 3076-3082
- 23.** G. Papadakis, A. Tsortos, F. Bender, E. Ferapontova, E. Gizeli\*  
*Direct detection of DNA conformation in hybridization processes*  
**Analytical Chemistry** 2012, 84, 1854-1861
- 24.** M. Saitakis, E. Gizeli\*  
*Acoustic sensors as a biophysical tool for probing cell attachment and cell/surface interactions, Cellular and Molecular Life Sciences* 2012, 69, 357-371 ([Invited review](#))
- 25.** A. Tsortos, G. Papadakis, E. Gizeli\*  
*The intrinsic viscosity of linear DNA; Biopolymers* 2011, 95, 12, 824-832
- 26.** K. Mitsakakis, E. Gizeli\*  
*Multi-sample acoustic biosensing microsystem for protein interaction analysis; Biosensors and Bioelectronic* 2011, 26, 4579-4584
- 27.** K. Mitsakakis, E. Gizeli\*  
*Detection of multiple cardiac markers with an integrated acoustic platform for cardiovascular risk assessment*  
**Analytical Chimica Acta** 2011, 699, 1-5 ([Feature article](#))
- 28.** M. Saitakis, E. Gizeli\*,  
*Quantification of the effect of glycocalyx condition on membrane receptor interactions using an acoustic wave sensor; European Biophysics Journal* 2011, 40, 209-215
- 29.** G. Papadakis, A. Tsortos, E. Gizeli\*  
*Acoustic characterization of nanoswitch structures; application to the DNA Holliday Junction; Nano Letters* 2010, 10, 5093-5097
- 30.** A. Pantazis, E. Gizeli\*, G. Kostantinidis\*



*A high frequency GaN Lamb-wave sensor device; Applied Physics Letters* 2010, **96**, 194103

- 31.** G. Papadakis, A. Tsortos, K. Mitsakakis, E. Gizeli\*  
*Characterization of DNA-Hv1 histone interactions; discrimination of DNA size and shape; FEBS Letters* 2010, **584**, 935-940
- 32.** M. Saitakis, A. Tsortos, E. Gizeli\*  
*Probing the interaction of a membrane receptor with a surface-attached ligand using whole cells on acoustic biosensors; Biosensors Bioelectronics* 2010, **25**, 1688-1693
- 33.** K. Melzak, A. Tsortos, E. Gizeli\*  
*Use of Acoustic Sensors to probe the mechanical properties of liposomes*  
**Methods in Enzymology** 2009, **465**, 21-41 ([Invited](#))
- 34.** F. Bender, P. Roach, A. Tsortos, G. Papadakis, M.I. Newton, G. McHale, E. Gizeli\*  
*Development of a combined surface plasmon resonance/surface acoustic wave device for the characterization of biomolecules; Measurement Science and Technology* 2009, **20**, Art. No: 124011
- 35.** G. Papadakis, A. Tsortos, E. Gizeli\*  
*Triple-helix DNA structural studies using a Love wave acoustic biosensor; Biosensors & Bioelectronics* 2009, **25**, 702-707 ([Press report](#))
- 36.** K. Mitsakakis, A. Tserepi, E. Gizeli\*  
*SAW device integrated with microfluidics for array-type biosensing; Microelectronic Engineering* 2009, **86**, 1416-1418
- 37.** K. Mitsakakis, A. Tsortos, J. Kondoh, E. Gizeli\*  
*Parametric study of SH-SAW device response to various types of surface perturbations; Sensors Actuators B: Chemical* 2009, **138**, 408-416
- 38.** K.A. Melzak, E. Gizeli\*  
*Relative activity of cholesterol in OPPC/cholesterol/sphingomyelin mixtures measured with an acoustic sensor; Analyst* 2009, **134**, 609-614
- 39.** C. Hadjicharalambous, T. Sheynis, R. Jelinek, M. Shanahan, A. Ouellette, E. Gizeli\*  
*Mechanism of  $\alpha$ -defensin bactericidal action: comparative membrane disruption by Cryptidin-4 and its disulfide-null analogue; Biochemistry* 2008, **47**, 12626-12634
- 40.** M. Saitakis, A. Dellaporta, E. Gizeli\*  
*Measurement of 2D binding constants between cell bound MHC and immobilized antibodies with an acoustic biosensor; Biophysical Journal* 2008, **95**, 4963-4971 ([Press report](#))
- 41.** A. Tsortos, G. Papadakis, E. Gizeli\*  
*Shear acoustic wave biosensor for detecting DNA intrinsic viscosity & conformation: A study with QCM-D; Biosensors Bioelectronics* 2008, **24**, 836-841
- 42.** T. Shahal, K.A. Melzak, C.R. Lowe, E. Gizeli\*  
*Poly(dimethylsiloxane)-coated sensor devices for the formation of supported lipid bilayers and the subsequent study of membrane interactions; Langmuir* 2008, **24**, 11268-11275
- 43.** K.A. Melzak, F. Bender, A. Tsortos, E. Gizeli\*  
*Probing mechanical properties of liposomes using acoustic sensors; Langmuir* 2008, **24**, 9172-9180
- 44.** K. Mitsakakis, A. Tserepi, E. Gizeli\*  
*Integration of microfluidics with a Love wave sensor for the fabrication of a multisample analytical microdevice; Journal of Microelectromechanical Systems* 2008, **17**, 1010-1019



- 45.** Tsortos, G. Papadakis, K. Mitsakakis, K.A. Melzak, E. Gizeli\*  
*Quantitative determination of size and shape of surface-bound DNA using an acoustic wave sensor*  
**Biophysical Journal** 2008, 94, 2706-2715 ([3 Press reports](#))
- 46.** M. Farsari, G. Filippidis, T. Drakakis, K. Sambani, S. Georgiou, G. Papadakis, E. Gizeli, C. Fotakis  
*Three-dimensional biomolecule patterning*  
**Applied Surface Science** 2007, 253, 8115-8118
- 47.** T. Drakakis, G. Papadakis, K. Sambani, G. Filippidis, S. Georgiou, E. Gizeli, C. Fotakis, M. Farsari *Construction of three-dimensional biomolecule structures employing femtosecond lasers*  
**Applied Physics Letters** 2006, 89, 144108
- 48.** E. Gizeli\*, J. Glad  
*Single-step formation of a biorecognition layer for assaying histidine-tagged proteins*  
**Analytical Chemistry** 2004, 76 (14), 3995-4001.
- 49.** K.A. Melzak, D.J. Ellar, E. Gizeli\*  
*Interaction of cytolytic toxin CytB with a supported lipid bilayer; study using an acoustic wave device* **Langmuir** 2004, 20 (4), 1386-1392
- 50.** F. Martin, G. McHale, K. Melzak, E. Gizeli, M. Newton  
*Pulse mode shear-horizontal surface acoustic wave (SH-SAW) system for liquid-based sensing applications;* **Biosensors Bioelectronics** 2004, 19, 627-632
- 51.** E. Gizeli\*, F. Bender, A. Rasmusson, K. Saha, F. Josse, R. Cernosek  
*Sensitivity of the acoustic waveguide biosensor to protein binding as a function of the waveguide properties;* **Biosensors Bioelectronics** 2003, 18, 1399-1406
- 52.** K. Saha, F. Bender, A. Rasmusson, E. Gizeli\*  
*Probing the viscoelasticity and mass of a surface-bound protein layer with an acoustic waveguide device* **Langmuir** 2003, 19, 1304-1311
- 53.** K. Saha, F. Bender, E. Gizeli\*  
*Comparative study of IgG binding to proteins G and A: non-equilibrium kinetic and binding constant determination with the acoustic waveguide device;* **Analytical Chemistry** 2003, 75, 835-842
- 54.** M.I. Newton, G. McHale, F. Martin, E. Gizeli, K. Melzak  
*Generalized Love waves;* **Europhysics Letters** 2002, 58, 818-822
- 55.** K.A. Melzak, F. Martin, M.I. Newton, G. McHale, E. Gizeli\*  
*Acoustic determination of polymer molecular weights and rotation times;* **Journal of Polymer Science B: Physics** 2002, 40, 1490-1495
- 56.** K.A. Melzak, E. Gizeli\*  
*A silicate gel promoting deposition of lipid bilayers;* **Journal of Colloid and Interface Science** 2002, 246, 21-28
- 57.** A. Rasmusson, E. Gizeli\*  
*Comparison of poly(methylmethacrylate) and Novolak waveguide coatings for an acoustic biosensor;* **Journal of Applied Physics** 2001, 90, 5911-5914
- 58.** G. McHale, M. Newton, F. Martin, K. Melzak, E. Gizeli  
*Resonant conditions for Love wave guiding layer thickness;* **Applied Physics Letters** 2001, 79, 3542-3543
- 59.** M.I. Newton, F. Martin, K.A. Melzak, E. Gizeli, G. McHale  
*Harmonic Love wave devices for biosensing applications;* **Electronics Letters** 2001, 37, 340-341
- 60.** K.A. Melzak, E. Ralph, E. Gizeli\*

*Effect of the surface hydrophilicity on the formation of a membrane-type interface; Study using an acoustic wave device; **Langmuir** 2001, 17, 1594*

61. M.I. Newton, G. McHale, F. Martin, E. Gizeli, K.A. Melzak  
*Pulse mode operation of Love wave devices for biosensing applications; **Analyst** 2001, 126, 2107-2109*
62. E. Gizeli\*  
*Study of the sensitivity of the acoustic waveguide sensor; **Analytical Chemistry** 2000, 72, 5967-5972*
63. C. MacMullen, H. Mehta, E. Gizeli\*, C. Lowe  
*Modelling of the mass sensitivity of the Love wave device in the presence of a viscous liquid*  
**Journal of Physics: D Applied Physics** 2000, 33, 3053-3059
64. E. Gizeli\*, M. Liley, C.R. Lowe, H. Vogel  
*Antibody binding to a functionalized supported lipid layer: A direct acoustic immunosensor; **Analytical Chemistry** 1997, 69, 4808-4813*
65. E. Gizeli\*  
*Design considerations for acoustic wave biosensors; **Smart Materials and Structures** 1997, 6, 700-706, ([Invited](#))*
66. E. Gizeli, M. Liley, C.R. Lowe, H. Vogel  
*Detection of supported lipid layers with the acoustic Love waveguide device: Application to biosensors; **Sensors and Actuators B Chemical** 1996, 34, 295-300*
67. E. Gizeli\*, C.R. Lowe  
*Immunosensors; **Current Opinion in Biotechnology** 1996, 7, 66-79 ([Invited Review](#))*
68. A.C. Stevenson, E. Gizeli, N.J. Goddard, C.R. Lowe  
*Acoustic Love plate sensors: a theoretical model for the optimization of the surface mass sensitivity; **Sensors and Actuators B-Chemical** 1993, 14, 635-637*
69. E. Gizeli, A.C. Stevenson, N.J. Goddard, C.R. Lowe  
*Acoustic Love plate sensors: comparison with other acoustic devices utilising surface SH waves; **Sensors and Actuators B-Chemical** 1993, 14, 638-639*
70. E. Gizeli, A.C. Stevenson, N.J. Goddard, C.R. Lowe  
*A Love plate biosensor utilizing a polymer layer; **Sensors and Actuators B-Chemical** 1992, 6, 131-137*
71. E. Gizeli, A.C. Stevenson, N.J. Goddard, C.R. Lowe  
*A novel Love-plate acoustic sensor utilizing polymer overlayers; **IEEE Transactions on Ultrasonics Ferroelectric and Frequency Control** 1992, 39 (5), 657-659*

### Peer-reviewed articles in conference proceedings

1. E. Gogolides, A. Tserepi, G. Jobst, J-M. Friedt, D. Rabus, B. Dupuy, Z. Bilkova, S. Descroix, J-L. Viovy, G. Papadakis, E. Gizeli  
*Micro-Nano-Bio Diagnostic System for Food Pathogen Detection Revolutionizes Food Safety Management & Protects Consumers Health, . **pHealth 2016, Proc. 13th International Conference on Wearable Micro and Nano Technologies for Personalised Health**, 67-73*  
Eds N. Maglaveras and E. Gizeli, IOS Press, The Netherlands, 2016
2. G. Kaprou, G. Papadakis, G. Kokkoris, V. Papadopoulos, I. Kefala, D. Papageorgiou, E. Gizeli, A. Tserepi  
*Miniaturized devices towards an Integrated Lab-on-a-chip Platform for DNA diagnostics*

- Proc. SPIE 9518, Bio-MEMS and Medical Microdevices II**, 95180G (2015); doi:10.1117/12.2181953
3. G. Kaprou, K. Tsougeni, A. Kastania, G. Kokkoris, G. Papadakis, S. Chatzandroulis, E. Gizeli, P. Petrou, S. Kakabakos, E. Gogolides, and A. Tserepi  
*Lab-on-a-chip for food-pathogen detection*,  
**Proc. of 10<sup>th</sup> Panhellenic Conference of Chemical Engineering** (2015)
  4. K. Mitsakakis, A. Tserepi, E. Gizeli\*  
*An integrated microfluidics-on-SAW setup for multi-sample sensing*  
**IEEE International Frequency Control Symposium Proceedings**, 2008, 337-340
  5. *Acoustic wave biosensor for detecting DNA conformation; a study with QCM-D*  
A. Tsortos, G. Papadakis, E. Gizeli\*, **IEEE International Frequency Control Symposium Proceedings**, 2008, 346-349
  6. M. Saitakis, A. Dellaporta, E. Gizeli\*  
*A surface acoustic wave sensor for the study of membrane-protein/ligand interactions using whole cells* **IEEE International Frequency Control Symposium Proceedings**, 2008, 356-359
  7. E. Gizeli\*, H. Mehta, C.R. Lowe  
*Novel calibration of the Love wave sensor utilising phospholipid bilayers*  
**Chemical and Biological Sensors and Analytical Electrochemical Methods Proceedings**, 97 (19), Symposium of Electrochemical Society and International Society of Electrochemistry, 1997, 155-164.

### Press release

1. EC-funded project LOVE-FOOD: distinction by the Council of European Research and Innovation Ministers (<https://ec.europa.eu/digital-single-market/en/news/project-food-safety-gets-recognition-eu-council>) (January 2016)
2. For the article Scientific Reports (Papadakis et al., 2013): **Report** on GenomeWeb.com "Researchers pair acoustic measurements with PCR for label free SNP genotyping-gene expression assays" (June 27, 2013)
3. For the article in Biophysical Journal (Tsortos et al. 2008):
  - **Commentary** in HFSP Journal (vol. 2(4), pp. 171-177, 2008)
  - **Hot-off-the-press** report by the Human Frontier Science Program: «Acoustic waves can 'see' the conformation of surface-attached DNA molecules»
  - **Report** in "Biotech Business Week" (*NewsRx*, p.796, 16/6/2008)
4. For the article in Biophysical Journal (Saitakis et al. 2008): **Report** in "Biotech Business Week" (*NewsRx*, 08/01/2009)
5. For the article in Biosensors & Bioelectronics (Papadakis et al. 2009): **Hot-off-the-press** report by the Human Frontier Science Program: "Novel biophysical method to characterize drug candidates for anti-gene therapy"