

# Curriculum Vitae

## Burcu Gümüşcü-Sefünç

### CONTACT INFORMATION

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### EDUCATION

2012 - 2016	Ph.D.	BIOS Lab-on-a-chip group, University of Twente, The Netherlands
2010 - 2012	M.Sc.	Institute of Materials Science and Nanotechnology, Bilkent University, Turkey
2008 - 2009	B.Sc. exchange student	Department of Life Sciences, Universidad Europea Miguel de Cervantes, Spain
2006 - 2010	B.Sc.	Department of Biology, Hacettepe University, Turkey

### WORK EXPERIENCE

March 2017 –	Postdoctoral fellow	Herr Lab, Department of Bioengineering University of California, Berkeley, USA
September 2016 – March 2017	Postdoctoral fellow	BIOS Lab-on-a-chip group, MESA+ Institute for Nanotechnology, MIRA Institute for Biomedical Technology and Technical Medicine, Faculty of Electrical Engineering, Mathematics and Computer Science University of Twente, The Netherlands
October 2012 - September 2016	Ph.D. candidate	BIOS Lab-on-a-chip group, MESA+ Institute for Nanotechnology, MIRA Institute for Biomedical Technology and Technical Medicine, Faculty of Electrical Engineering, Mathematics and Computer Science University of Twente, The Netherlands
June 2011 - June 2012	Visiting research assistant	Department of Food Engineering Middle East Technical University, Turkey
September 2010 - July 2012	Teaching and Research Assistant	Sustainable technologies group, Institute of Materials Science and Nanotechnology (UNAM) Bilkent University, Turkey

### DISSERTATIONS

1. "Lab-on-a-Chip devices with hydrogels: Engineered microarrays for biomolecule separation, organ on chip, and desalination", Ph.D. thesis, September 2016.
2. "Bioremediation of 2,4,6-trinitrotoluene by novel strains of aerobic bacteria", M.Sc. thesis, July 2012.

### ACADEMIC OUTPUT AND PUBLICATIONS

#### Peer-reviewed journal articles

1. B. Gumuscu, H.J. Albers, A. van den Berg, J.C.T. Eijkel, A.D. van der Meer, "Multicompartmental Hydrogel Arrays for Controlled Microfluidic 3D Tissue Cultures", submitted to *Scientific Reports*.
2. B. Gumuscu, J.G. Bomer, H.L. de Boer, A. van den Berg, J.C.T. Eijkel, "Exploiting biased reptation for continuous flow preparative DNA fractionation", *Nature Microsystems and Nanoengineering*, 2017, DOI: 10.1038/micronano.2017.1.
3. B. Gumuscu, A.S. Haase, A.M. Benneker, M.A. Hempenius, A. van den Berg, R.G.H. Lammertink, J.C.T. Eijkel, "Desalination by electrodialysis using a stack of patterned ion-selective hydrogels on a microfluidic device", *Advanced Functional Materials*, 2016, 26, 8685-8693.
4. B. Gumuscu, J.G. Bomer, A. van den Berg, J.C.T. Eijkel, "Photopatterning of hydrogel microarrays in closed microchips", *Biomacromolecules*, 2015, 16, 3802-3810.
5. B. Gumuscu, J.G. Bomer, A. van den Berg, J.C.T. Eijkel, "Large scale patterning of hydrogel microarrays using capillary pinning", *Lab on a Chip*, 2015, 15, 664-667.
6. B. Gumuscu, D. Cekmecelioglu and T. Tekinay, "Complete dissipation of 2,4,6-trinitrotoluene by *in-vessel* composting", *RSC Advances*, 2015, 5, 51812-51819.
7. B. Gumuscu, Z. Erdogan, M. O. Guler and T. Tekinay, "A highly sensitive determination of trinitrotoluene and its metabolites by using diol functionalized column with high performance liquid chromatography", *PLoS One*, 2014, 9, 6, e99230.
8. B. Gumuscu, T. Tekinay, "Effective biodegradation of 2, 4, 6 - trinitrotoluene using a novel bacterial strain isolated from TNT - contaminated soil", *International Biodeterioration & Biodegradation*, 2012, 85, 35 - 41.
9. B. Gumuscu, T. Tekinay, "TNT degradation by novel bacteria strains", *Current Opinion in Biotechnology*, 2011, 22:S66.

#### Conference proceedings

1. B. Gumuscu, H. J. Albers, A. van den Berg, A.D. van der Meer, J.C.T. Eijkel, "Multicompartmental hydrogel arrays for 3D culturing", MicroNano Conference 2016, Amsterdam, The Netherlands, 12-14 December 2016 (**poster presentation**).
2. B. Gumuscu, A. van den Berg, J.C.T. Eijkel, "Simultaneous DNA purification and fractionation in agarose gel on the micro-scale", the 20<sup>th</sup> International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS), Dublin, Ireland, 9-13 October 2016 (**oral presentation**).

3. B. Gumuscu, A.S. Haase, A.M. Benneker, A. van den Berg, R.G.H. Lammertink, J.C.T. Eijkel, "*Desalination by electro dialysis using a stack of charged hydrogels in a microfluidic platform*", the 20<sup>th</sup> International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS), Dublin, Ireland, 9-13 October 2016 (**oral presentation**).
4. H. J. Albers, B. Gumuscu, A. van den Berg, A.D. van der Meer, J.C.T. Eijkel, "Multicompartmental hydrogel arrays for 3D culturing of human intestine epithelial cells", NanoCity 2016, Amsterdam, The Netherlands, 21 June 2014 (**poster presentation**).
5. B. Gumuscu, A. van den Berg, J.C.T. Eijkel, "Agarose gels in microfluidic chips for high-performance continuous flow DNA fractionation", NanoCity 2016, Amsterdam, The Netherlands, 21 June 2014 (**poster presentation**).
6. B. Gumuscu, A. van den Berg, J.C.T. Eijkel, "Continuous flow DNA fractionation based on field-dependent mobility in Agarose Gels", Chiranal 2016, Olomouc, Czech Republic, 6-9 June 2016 (**invited oral presentation**).
7. B. Gumuscu, A. van den Berg, J.C.T. Eijkel, "In-situ patterning of hydrogel microarrays in closed microchips", MicroNano Conference, Amsterdam, The Netherlands, 8-9 December 2015 (**invited poster presentation**).
8. B. Gumuscu, A. van den Berg, J.C.T. Eijkel, "In-situ patterning of hydrogel microarrays", NanoCity 2015, Amersfoort, The Netherlands, 5-6 October 2015 (**poster presentation**).
9. B. Gumuscu, J.G. Bomer, A. van den Berg, J.C.T. Eijkel, "In-situ photopatterning of hydrogel microarrays in polished microchips", the 19<sup>th</sup> International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS), Gyeongju, South Korea, 25-29 October 2015 (**poster presentation**).
10. B. Gumuscu, A. van den Berg, J.C.T. Eijkel, "Capillary pinning as a strategy for custom hydrogel patterning in microfluidic devices", NanoCity 2014, Utrecht, The Netherlands, 27-28 October 2014 (**poster presentation**).
11. B. Gumuscu, J.C.T. Eijkel, A. van den Berg, "Custom micropatterning of hydrogels in closed microfluidic platforms fabricated by capillary pinning", the 18th International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS), San Antonio, USA, 26-30 October 2014 (**poster presentation**).
12. B. Gumuscu, J.C.T. Eijkel, A. van den Berg, "High-resolution micropatterned hydrogels by photopolymerization for lab-on-a-chip applications", Flow14 Conference, Enschede, The Netherlands, 18-21 May 2014 (**poster presentation**).
13. B. Gumuscu, T. Tekinay, "A novel approach on extensive biodegradation of 2,4,6-trinitrotoluene by bacterial strains", NATO 29<sup>th</sup> Panel Business Week, 2012, San Diego, USA, 16-20 April 2012 (**oral presentation**).
14. B. Gumuscu, T. Tekinay, "Environmental effects of TNT and DNT: a study on TNT tolerant bacterial strains", NATO-Munition and Propellant Disposal and its Impact on the Environment (AVT-177) Conference, Edinburgh, Scotland, 17-20 October 2011 (**poster presentation**).
15. B. Gumuscu, T. Tekinay, D. Cekmecelioglu, "Bioremediation of 2,4,6-trinitrotoluene contaminated soil using *in-vesse!* composting method", Eurasia Waste Management Symposium, Istanbul, Turkey, 14-16 November 2011 (**poster presentation**).
16. B. Gumuscu, T. Tekinay, "Extensive degradation of TNT by genetically modified TNT tolerant bacterial strains", European Biotechnology Congress 2011, Istanbul, Turkey, 28 September-1 October 2011 (**oral presentation**).
17. B. Gumuscu, "Telomere and its regulation", National Molecular Biology and Genetics Student Congress, Istanbul Technical University, Istanbul, Turkey, 8-11 September 2007 (**oral presentation**).

#### HONORS, ACHIEVEMENTS & AWARDS

2016	CMBES travel award for MicroTAS 2016 conference attendance.
2015	Top 30 most downloaded articles published in Lab on a Chip Journal in 2015.
2014	CMBES travel award for MicroTAS 2014 conference attendance.
2014	The 18 <sup>th</sup> MicroTAS conference highlighted posters (in 15% top scorers over 1000 submissions).
2012-2015	Patent application support, TUBITAK (Scientific and Technological Research Council of Turkey), Turkey.
2011	Bronze Medal, International Genetically Engineered Machine Competition, MIT, USA.
2010-2012	Merited full scholarship for M.Sc. education by Bilkent University, Turkey.
2006-2010	Dean's High Honor list for all academic semesters, Hacettepe University, Department of Biology, Turkey.
2007-2008	Merited Erasmus scholarship for undergraduate education in Universidad Europea Miguel de Cervantes, Spain.
2004-2009	Merited scholarship by Prime Ministry of Turkish Government for undergraduate education.

#### TEACHING EXPERIENCE

##### Teaching assistant, University of Twente

1. Teaching Assistant Fall 2016 - Lab on a Chip Module 10 2016-201500054-1B (Undergraduate course)
2. Teaching Assistant Fall 2015 - Lab on a Chip Module 10 2015-201500054-1B (Undergraduate course)
3. Teaching Assistant Fall 2015 - Introduction to Electrical Engineering and Electronics 201500096 (Undergraduate course)
4. Teaching Assistant Fall 2014 - Lab on a Chip Module 10 2014-201400054-1B (Undergraduate course)
5. Teaching Assistant Fall 2014 - Introduction to Electrical Engineering and Electronics 201400096 (Undergraduate course)
6. Teaching Assistant Fall 2013 - Introduction to Electrical Engineering and Electronics 201300096 (Undergraduate course)

##### Teaching assistant, Bilkent University

7. Teaching Assistant Fall 2011 - MSN 515 Nanotechnology in Agriculture and Food (Graduate course)
8. Teaching Assistant Spring 2011 - MSN 521 Biotechnology (Graduate course)