

# HATICE CEYLAN KOYDEMIR

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## EDUCATION

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- Postdoctoral Research – Dept. of Electrical Engineering (P.I. - Prof.Dr. Aydogan Ozcan) Present – Aug 2013
- Postdoctoral Research - METU-MEMS Center (P.I. - Prof.Dr. Haluk Kulah) Feb - Aug 2013
- Ph. D., Department of Chemical Engineering, Middle East Technical University (METU) 2007 - 2013
- M. Sc., Department of Chemical Engineering, METU 2004 - 2007
- Minor Program, Department of Food Engineering, METU 2001 - 2004
- B. Sc., Department of Environmental Engineering, METU 1999 - 2004

## PATENT

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- **H. Ceylan Koydemir**, H. Kùlah, C. Özgen, “**Micro Electrochemical Sensor**”, International patent application was filed in 2012.

## PUBLICATIONS

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### Articles

- B. Cortazar, **H. Ceylan Koydemir**, D. Tseng, S. Feng and A. Ozcan, “Quantification of Plant Chlorophyll Content Using Google Glass,” Lab on a Chip, Vol. 15, 1708-1716, 2015.
- **H. Ceylan Koydemir**, Z. Gorocs, D. Tseng, B. Cortazar, S. Feng, R.Y.L. Chan, J. Burbano, E. McLeod, and A. Ozcan, “Rapid imaging, detection and quantification of Giardia lamblia cysts using mobile-phone based fluorescent microscopy and machine learning,” Lab on a Chip, Vol. 15, 1284-1293, 2015, (Is a part of themed collection: Lab on a Chip Recent HOT articles).
- **H. Ceylan Koydemir**, H. Kùlah, A. Alp, A. Uner, G. Hasçelik, C. Özgen, “A Fully Microfabricated Electrochemical Sensor and its Implementation for Detection of Methicillin Resistance in *Staphylococcus aureus*”, IEEE Sensors, Vol. 14, No. 6, 1844-1851, June 2014.
- **H. Ceylan Koydemir**, H. Kùlah, C. Özgen, “Solvent Compatibility of Parylene C Film Layer”, JMEMS, Vol. 23, No.2, 298-307, April 2014.
- **H. Ceylan Koydemir**, H. Kùlah, C. Özgen, A. Alp, G. Hasçelik, “MEMS Biosensors for Detection of Methicillin Resistant *Staphylococcus aureus*”, Biosensors and Bioelectronics, Vol. 29, No. 1, pp. 1-12, October 2011. (In the list of most downloaded articles between October 2011- February 2012).

### Book Chapter

- **H. Ceylan Koydemir**, H. Kùlah, C. Özgen, “**Thin Films and Biosensors**”, in “Thin Films and Coatings in Biology”, Editors: S. Nazarpour, M. Chaker, Springer, 2014.

### Conference Proceedings

- **H. Ceylan Koydemir** and A. Ozcan, “Mobile-Phone Based Optical Imaging Platform for Rapid and Accurate Detection and Quantification of Waterborne Pathogens in Low Resource Settings”, The Knowledge Foundation's Sensor Global Summit 2015, Track 3: Sensor R&D – Advanced Materials, Design, Modeling & Fusion for Sensor Applications, (November 10 - 11, 2015), La Jolla, California, USA. (Invited Talk).
- **H. Ceylan Koydemir**, Z. Gorocs, D. Tseng, B. Cortazar, S. Feng, R. Yan Lok Chan, J. Burbano, E. McLeod, and A. Ozcan, “Mobile-phone Based Optical Microscopy and Machine Learning Platform for Rapid Detection and Quantification of Waterborne Pathogens in Low resource Settings”, IEEE Global Humanitarian Technology Conference (GHTC), (October 8-11, 2015), Seattle, Washington, USA.

- B. Cortazar, **H. Ceylan Koydemir**, D. Tseng, S. Feng, and A. Ozcan, "Non-destructive and Rapid Plant Chlorophyll Quantification Using Google Glass," BMES (Biomedical Engineering Society) Annual Meeting, (October 7-10, 2015), Tampa, Florida, USA.
- **H. Ceylan Koydemir**, B. Cortazar, D. Tseng, S. Feng, and A. Ozcan, "Non-invasive and Field-based Quantification of Plant Chlorophyll Content Using Google Glass", 16th Annual UC Systemwide Bioengineering Symposium, June 22-24, 2015, University of California, Santa Cruz, CA.
- **H. Ceylan Koydemir**, Z. Gorocs, D. Tseng, and A. Ozcan, "Rapid and sensitive detection and counting of Giardia lamblia cysts in water samples using a field portable and cost-effective fluorescence imaging platform on a mobile-phone", University of California, Global Health Day, April 18, 2015, University of California, Los Angeles, USA.
- **H. Ceylan Koydemir**, Z. Gorocs, E. Mcleod, D. Tseng and A. Ozcan, "Field Portable Fluorescence Microscopy for Detection of Giardia lamblia Cyst in Water Samples," SPIE Photonics West, Optics and Biophotonics in Low-Resource Settings, February 7-12, 2015, San Francisco, CA, Paper # 9314-28.
- B. Cortazar, **H. Ceylan Koydemir**, D. Tseng, S. W. Feng, and A. Ozcan, "Field quantification of plant chlorophyll content using Google Glass," SPIE Photonics West, Optics and Biophotonics in Low-Resource Settings, February 7-12, 2015, San Francisco, CA, Paper # 9314-4.
- **H. Ceylan Koydemir**, Z. Gorocs, E. McLeod, D. Tseng, A. Ozcan, "Waterborne pathogen detection Using a smart phone based fluorescent microscopy," MicroTAS 2014 – The 18th International Conference on Miniaturized Systems for Chemistry and Life Sciences, San Antonio, Texas, USA (October 26-30, 2014).
- **H. Ceylan Koydemir**, Z. Gorocs, E.R. McLeod, D. Tseng and A. Ozcan, "Smartphone enabled waterborne pathogen detection using fluorescence microscopy", 15th Annual UC Systemwide Bioengineering Symposium, June 18-20, 2014, University of California, Irvine, USA.
- **H. Ceylan Koydemir**, Z. Gorocs, E. McLeod, D. Tseng, A. Ozcan, " Smartphone Enabled Waterborne Pathogen Detection Using Fluorescence Microscopy", 15th Annual UC Systemwide Bioengineering Symposium, University of California, Irvine, USA, June 18-20, 2014.
- G. Bahrieh, **H. Ceylan Koydemir**, M. Erdem, E. Özgür, U. Gündüz, H. Külah, "Dielectric Characterization of Imatinib Resistant K562 Leukemia Cells Through Electrorotation with 3-D Electrodes", IEEE SENSORS 2013 Conference, Baltimore, Maryland, USA, November 3-6, 2013.
- **H. Ceylan Koydemir**, D.Hocaoglu, H. Külah, C. Özgen, "Femtogram-Level Detection Of Staphylococcal Enterotoxin B Using MEMS Based Micro Electrochemical Sensor", 44th World Chemistry Congress, İstanbul, 11-16 August, 2013.
- Hilal Torul, Uğur Tamer, Yekbun Adıgüzel, Hakan Çiftçi, **Hatice Ceylan Koydemir**, and Haluk Külah, "SERS Based Non-Enzymatic Glucose Detection on Chip", 8<sup>th</sup> International Conference on Instrumental Methods of Analysis Modern Trends and Applications, Thessaloniki, Greece, 15-19 September, 2013.
- **H. Ceylan Koydemir**, H. Külah, C. Özgen, "Integration of a disposable microelectrochemical sensor with microfluidics for point of care applications", Uluslararası Katılımlı Elektrokimya Çalıştayı – Nanoyapı Modifiye Elektrokimyasal ve Biyoelektrokimyasal Sistemler, Muğla, 23-28 June, 2013.
- **H. Ceylan Koydemir**, H. Külah, C. Özgen, "Thin Film Biosensor for Electrochemical Detection of Hybridization of DNA", 10. National Chemical Engineering Congress, İstanbul, 3-6 September 2012.
- **H. Ceylan Koydemir**, H. Külah, C. Özgen, İ.Tosun, "Effects of Solvents on Dissolution of Photoresist in Parylene Microchannels", TechConnect World 2012(Nanotech), Santa Clara, California, 18-21 June 2012.

- **H. Ceylan Koydemir**, H. K lah, C.  zgen, A. Alp, G. Has elik, "MEMS Based Micro Electrochemical Sensor for Detection of MRSA", 7<sup>th</sup>National Molecular and Diagnostic Microbiology Congress, Ankara, 5-8 June 2012.
- **H. Ceylan Koydemir**, H. K lah, C.  zgen, "A Micro Electrochemical Sensor for the Detection of Methicillin Resistance in *Staphylococcus aureus*", 22<sup>nd</sup>Anniversary World Congress on Biosensors, Cancun, Mexico, 15-18 May 2012.
- D. Ert rkan, **H. Ceylan Koydemir**, H. K lah, and C.  zgen, "Detection of *Candida albicans* with the Use of Protocol Developed for MEMS Based Biosensors", Turkish National Committee of Automatic Control, 14-16 September 2011.
- **H. Ceylan**, H. K lah, A. Alp, G. Has elik, C.  zgen, "Design and Fabrication of MEMS Based Electrochemical Biosensor", 9<sup>th</sup>National Chemical Engineering Congress, Ankara, 22-25 June 2010.
- **H. Ceylan**, H. K lah, A. Alp, C.  zgen and G. Has elik, "A Disposable MEMS DNA Biosensor for Antibiotic Resistant Gene Detection in *Staphylococcus aureus*", 15<sup>th</sup>National Biomedical Engineering Meeting, 21-24 April 2010.
- **H. Ceylan**, H. K lah, C.  zgen, A. Alp, G. Has elik, "Detection of Bacterial DNA using MEMS Based DNA Biosensor", Turkish National Committee of Automatic Control, İstanbul, 13-16 October 2009.
- **H. Ceylan**, C.  zgen, "Dynamic Modelling and Optimal Control of a Multicomponent Batch Distillation Column", 17<sup>th</sup>IFAC World Congress Seoul, Korea, 6-11 July 2008.
- **H. Ceylan**, C.  zgen, "Dynamic Modeling and Simulation Studies for a Multicomponent Batch Packed Distillation Column", 8<sup>th</sup>National Chemical Engineering Congress, Malatya, 26-28 August 2008.
- **H. Ceylan**, C.  zgen, "Optimal Control of Multicomponent Batch Packed Distillation Column", Turkish National Committee of Automatic Control, 05-07 September 2007.

## RESEARCH

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- Ph.D.Dissertation: **MEMS Based Electrochemical DNA Sensor to Detect Methicillin Resistant *Staphylococcus aureus* (MRSA) and Vancomycin Resistant *Enterococcus* Species**  
Advisor: Prof. Dr. Canan  zgen, Chemical Engineering, METU  
Dean, Grad. Sch. of Natural and Applied Sciences, METU  
Co-Advisor: Assoc. Prof. Dr. Haluk K lah, Electrical and Electronics Engineering, METU  
Collaborators: Prof. Dr. G l en Has elik, Clinical Microbiology, Medical School, Hacettepe University  
Assoc. Prof. Dr. Alpaslan Alp, Clinical Microbiology, Medical School, Hacettepe University  
This work comprises **design, fabrication, and implementation of a micro electrochemical sensor** by using **MEMS technology** and **surface immobilization** procedures.
- M. Sc. Dissertation: Control and Simulation Studies for a Multicomponent Batch Packed Distillation Column  
Advisor: Prof. Dr. Canan  zgen, Chemical Engineering, METU

## HONORS / AWARDS

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- METU Prof. Dr. Mustafa N. Parlar Education and Research Foundation Award – 2012-2013 Education Year *METU Ph.D. Thesis of the Year Award*, 2013.
- *Dr. Haluk Sanver Technology Award*, 2013.
- *Prof. Dr. Hasan Orbey, Ph.D. Thesis Award*, given by Department of Chemical Engineering, METU, 2011.
- The Scientific and Technological Research Council of Turkey Incentive Award for the International Scientific Publications, 2011.

- METU Publication Award, 2011.
- The Best Paper Award in the 15<sup>th</sup> National Biomedical Engineering Conference, 2010.
- **The Scientific and Technological Research Council of Turkey Ph.D. Fellowship,** 2007 – 2012
- **The Scientific and Technological Research Council of Turkey M. Sc. Fellowship,** 2005 – 2007

**EMPLOYMENT**

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- Postdoctoral Researcher, Dept. of Electrical Engineering, UCLA Present - 2013
- Scientific Research Expert, METU-MEMS Research and Application Center 2010 - 2013
- Research Assistant, Graduate School of Natural and Applied Sciences, METU 2007 - 2010

**CURRENT RESEARCH INTERESTS**

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- Chemical and biological sensors for point of care diagnosis,
- Infectious diseases,
- Surface immobilization strategies,
- Microsystems and microfabrication technologies, BioMEMS,
- Organ-on-a-chip devices.

**LANGUAGES**

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- English, Spanish (beginner), Korean (beginner), Turkish (mother language).