Omer Yehezkeli

Omer Yehezkeli, Ph.D.
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Department of Biotechnology & Food Engineering
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Education

2013 Ph.D., Chemistry, The Hebrew University of Jerusalem

2008 M.Sc., Chemistry, The Hebrew University of Jerusalem

2006 B.Sc., Chemistry (minor, Structural and Molecular Biochemistry), The Hebrew University of Jerusalem

Professional experience

2017- Assistant Prof. Department of Biotechnology & Food Engineering
Technion-Israel Institute of Technology Haifa, Israel.

2013-2017 Post-Doc, Research Associate, Department of Chemical & Biological Engineering,
University of Colorado, Boulder. (advisor Jennifer N. Cha)

2006-2013 Graduate Researcher- The Hebrew University of Jerusalem (advisor Itamar Willner)

2008-2010 R&D at Sensogene (Medingo)-implanted amperometric glucose biosensors

1998-2002 Army Service: Paratrooper Officer; rank: captain (reserved)

Teaching

2009-2013 Teaching Assistant, Chemistry Labs, The Hebrew University of Jerusalem

2010-2012 Teaching Assistant, Organic Chemistry, The Hebrew University of Jerusalem

2007-2008 Teaching Assistant, General Chemistry Labs, Jerusalem College of Engineering

Awards and honors

- Catalysis and Surface Science Super Group (CSSSG), 2015/2016 Speaker of the Year.
- The American Institute of Chemist Post-Doctoral Award 2015.
- The Levi Eshkol doctoral scholarship for scientific achievement, the Israeli Ministry of Science and Technology. 2011-2013.
- Jacob Laivand Award for Alternative Energy Research 2009, 2011.

Patents

- Electrode, Method and System for Determining an Analyte in a Liquid Medium.
  US20110174614 A1, EP2300619 (A1)
- Photochemical Electrode, Construction And Uses Thereof
  US 12/994,821

Publications

1. S. Ganguly, S. Paul, **O. Yehezkeli**, J. N. Cha, and M. H. Caruthers Boranephosphonate DNA Mediated Metallization of Single Walled Carbon Nanotubes, ***Accepted, DOI: 10.1021/acs.chemmater.6b05182***

2. G. R. Hafenstine, K. Ma, A. W. Harris, **O. Yehezkeli**, E. Park, D. W. Domaille, J. N. Cha, and A. P. Goodwin, Multicatalytic, Light-Driven Upgrading of Butanol to 2-Ethylhexenal and Hydrogen under Mild Aqueous Conditions. ***ACS Catal.***, ***7***, 568–572, (2017).

3. M. Ke, **O.Yehezkeli**, E. Park, and J. N. Cha. Enzyme Mediated Increase in Methanol Production from Photoelectrochemical Cells and CO2. ***ACS Catal. 6***, 6982–6986, (2016)

4. **O. Yehezkeli**, N. M. Badford, E. Park, M., Ke, and J. N. Cha. Semiconductor based Solar Driven Photochemical Cells for Fuel Generation from CO2 in Aqueous Solutions, ***ChemSusChem , 9***, *3188–3195.* (2016)

5. **O. Yehezkeli**, A. Harguindey, D. W. Domaille, L. He, J. N. Cha Synthesis and Phase Transfer of Well-Defined BiVO4 Nanocrytals for Photocatalytic Water Splitting ***RSC Adv. 5***, *58755-58759,* (2015)

6. K. Ma, **O. Yehezkeli**, D. W. Domaille,H. H Funke, J. N. Cha Enhanced Hydrogen Production from DNA Assembled Z-scheme TiO2-CdS Photocatalyst Systems ***Angew. Chem. Int. Ed., 54*** , 11490-11494 (2015)

7. **O. Yehezkeli**, D. R.B. de Oliveira, J. N. Cha. Electrostatically Assembled CdS–Co3O4 Nanostructures for Photo-assisted Water Oxidation and Photocatalytic Reduction of Dye Molecules ***Small***, **11**, 668-674 (2015). **Frontispiece**

8. **O. Yehezkeli**, R. Tel-Vered, D. Michaeli, I. Willner and R. Nechushtai Photosynthetic Reaction Center – Functionalized Electrodes for Photo- Bioelectrochemical Cells. ***Photosynthesis Research***, **120**, 71-85 (2014).

9. Trifonov, K. Herkendell, R. Tel-Vered, **O. Yehezkeli**, M. Woerner and I. Willner Enzyme-Capped Relay-Functionalized Mesoporous Carbon Naoparticles: Effective Bioelectrocatalytic Matrices for Sensing and Biofuel Cell Applications. ***ACS Nano***, **7**, 11358-11368 (2013).

10. X. Liu, F. Wang. R. Aizen, **O. Yehezkeli** and I. Willner Graphene Oxide/Nucleic Acid-Stabilized Silver Nanoclusters: Functional Hybrid Materials for Optical Aptamer Sensing and Multiplexed Analysis of Pathogenic DNAs. ***J. Am. Chem. Soc.,*** **135**, 11832-11839 (2013).

11. Trifonov, **O. Yehezkeli**, R. Tel-Vered and I. Willner pH-Switchable Redox Reactions and Bioelectrocatalytic Processes Using Au Nanoparticles-Modified Electrodes. ***Electroanalysis***, **25**, 1605-1612 (2013).

12. **O. Yehezkeli**, R. Tel-Vered, D. Michaeli, R. Nechushtai and I. Willner Photosystem I (PSI)/Photosystem II (PSII)-Based Photo-Bioelectrochemical Cells Revealing Directional Generation of Photocurrents. ***Small***, **9**, 2970-2978 (2013).

13. E. Sharon, X. Liu, R. Freeman, **O. Yehezkeli** and I. Willner Label-Free Analysis of Thrombin or Hg2+ Ions by Nucleic Acid-Functionalized Graphene Oxide Matrices Assembled on Field-Effect Transistors. ***Electroanalysis***, **25**, 851-856 (2013).

14. Efrati, O. Yehezkeli, R. Tel-Vered, D. Michaeli, R. Nechushtai and I. Willner Electrochemical Switching of Photoelectrochemical Processes at CdS QDs and Photosystem I (PSI)-Modified Electrodes. ***ACS Nano***, **6**, 9258-9266 (2012).

15. X. Liu, R. Aizen, R. Freeman, **O. Yehezkeli**, and I. Willner. Multiplexed Aptasensors and Amplified DNA Sensors Using Functionalized Graphene Oxide: Application for Logic Gate Operations. ***ACS Nano 6*** *(4), 3553-3563.*

16. **O. Yehezkeli**, R. Tel-Vered, J. Wasserman, A. Trifonov, D. Michaeli, R.Nechushtai and I. Willner. Integrated Photosystem II-Based Photo-Bioelectrochemical Cells. ***Nature Commun****.,* **3**, 742 (2012).

17. R. Tel-Vered, **O. Yehezkeli** and I. Willner Biomolecule/ Nanomaterial Hybrid Systems for Nanobiotechnology. In: *Nano-Biotechnology for Biomedical and Diagnostic Research*, E. Zahavy, A. Ordentrich, S. Yitzhaki and A. Shaffermann (Eds.), Springer Science + Business Media B.V., Dordrecht, The Netherlands, 2012, Chapter 1, pp. 1-16.

18. O.I. Wilner, R. Orbach, A. Henning, C. Teller, **O. Yehezkeli**, M. Mertig, D.Harries and I. Willner. Self-assembly of DNA nanotubes with controllable diameters.
Nature Commun*.,* **2**, 540 (2011).

19. S. Raichlin, **O.Yehezkeli**, R. Tel-Vered and I. Willner. Glucose Oxidase-Mediated Reduction Processes: H2- Evolution, Hydrogenation of Acetylene and Reduction of NO3- by Glucose. ***ChemCatChem*** ,**3**, 1885–1888, (2011).

20. **O.Yehezkeli**, R. Tel-Vered, S. Raichlin, and I. Willner. Nano-engineered Flavin-Dependent Glucose Dehydrogenase/Gold Nanoparticle- Modified Electrodes for Glucose Sensing and Biofuel Cell Applications. ***ACS Nano***, **5**, 2385–2391, (2011)

21. **O. Yehezkeli**, S. Raichlin, R. Tel-Vered, E. Kesselman, D. Danino and I. Willner Biocatalytic Implant of Pt Nanoclusters into Glucose Oxidase: A Method to Electrically Wire the Enzyme and to Transform it from an Oxidae to Hydrogenase. ***J. Phys. Chem. Lett.,*** **1**, 2816-2819 (2010).

22. **O. Yehezkeli**, O. Ovits, R. Tel-Vered, S. Raichlin and I. Willner Reconstituted Enzymes on Electropolymerizable FAD-Modified Metallic Nanoparticles: Functional Units for the Assembly of Effectively "Wired" Enzyme on Electrodes. ***Electroanalysis***, **22**, 1817-1823 (2010).

23. **O. Yehezkeli**, O.I. Wilner, R. Tel-Vered, D. Roizman-Sade, R. Nechushtai and I. Willner Generation of Photocurrents by Bis-Aniline-Crosslinked Pt Nanoparticles/Photosystem I (PSI) Composites on Electrodes. ***J. Phys. Chem. B****.,* **114** ,14383–14388(2010).

24. **O. Yehezkeli**, M. Moshe, R. Tel-Vered, Y. Feng, Y. Li, H. Tian and I. Willner Switchable Photochemical/Electrochemical Wiring of Glucose Oxidase with Electrodes. ***Analyst,*** **135**, 474-476 (2010). **Inside Front Cover**

25. G. Piperberg, O.Wilner, **O. Yehezkeli**, R. Tel-Vered, and I. Willner, Control of Bioelectrocatalytic Transformations on DNA Scaffolds. ***J. Am. Chem. Soc.,*** **131**, 8724-8725 (2009).

26. **O. Yehezkeli**, Y.-M. Yan, I. Baravik, R. Tel-Vered and I. Willner Integrated Electrically Contacted Oligoaniline-Crosslinked Glucose Oxidase/Au Nanoparticles Electrodes for Glucose Sensing. ***Chem. Eur. J., 15***, 2674-2679 (2009).

27. L. Bahshi, M. Frasconi, R. Tel-Vered, **O. Yehezkeli** and I. Willner Following the Biocatalytic Activities of Glucose Oxidase by Electrochemically Cross-Linked Enzyme-Pt Nanoparticles Composite Electrode. ***Anal. Chem***., **80**, 8253-8259 (2008).

28. Y.-M. Yan, I. Baravik, **O. Yehezkeli** and I. Willner Integrated Electrically Contacted Glucose Oxidase/Carbon Nanotube Electrodes for the Bioelectrocatalyzed Detection of Glucose. ***J. Phys. Chem. C***., **112**, 17883-17888 (2008).

29. R. Tel-Vered, **O. Yehezkeli**, H.B. Yildiz, O.I. Wilner and I. Willner Photoelectrochemistry with Ordered CdS Nanoparticle/Relay or Photosensitizer/Relay Dyads on DNA Scaffolds. ***Angew. Chem. Int. Ed.***, **47**, 8272-8276 (2008).

30. Y.-M. Yan, R. Tel-Vered, **O. Yehezkeli**, Z. Cheglakov and I. Willner Biocatalytic Growth of Au Nanoparticles Immobilized on Glucose Oxidase Enhances the Ferrocene-Mediated Bioelectrocatalytic Oxidation of Glucose. ***Adv. Mater***., **20**, 2365-2370 (2008).

31. Y. -M. Yan, O**. Yehezkeli** and I. Willner Integrated Electrically Contacted $NAD(P)^+$-Dependent Enzyme/Carbon Nanotube Electrodes for Biosensors and Biofuel Cell Applications. ***Chem. Eur. J***., **13**, 10168-10175 (2007).