

CURRICULUM VITAE

NAME: **Joseph Wang**

TITLE: SAIC Endowed Chair,
Distinguished Professor of Nanengineering, UCSD
Director, Center Wearable Sensors (UCSD)
Co-Director, Center for Mobile-health Systems (UCSD)
Fellow RSC, Fellow AIMBE, Fellow ECS

ADDRESSES: Departments of Chemical and Nanonengineering
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<http://nanoengineering.ucsd.edu/~joewang>
Google Scholar Link:
<https://scholar.google.com/citations?user=0DEyKT4AAAAJ&hl=en>

EDUCATION: D.Sc., Chemistry, Technion, I.I.T., Haifa, 1978; Adviser: Magda Ariel.
Doctor *Honorius Causa*, Complutense University (Spain), 2007
Doctor *Honorius Causa*, University of Alcalá (Spain), 2011.

POSITIONS: SAIC Endowed Chair of Engineering, UCSD, 2014-present.
Distinguished Professor UCSD, 2014- Present
Director – Center for Wearable Sensors- UCSD, 2014-present
Co-Director- UCSD Center of Mobile Health Systems and Applications (CMSA), 2015-present.
Professor and Chair of Nanoengineering, UCSD, 2014- 2019
Professor of Chemical Engineering and Chemistry, ASU, 2004-2008
Director – Center for Bioelectronics and Biosensors – ASU Biodesign Institute, 2004- 2008

Regents Professor and Manasse Chair, NMSU, 2002- 2004

Founding Editor and Chief-Editor - *Electroanalysis*
(Wiley-VCH); 1988-2018.

Assistant, Associate and Full Professor of Chemistry, New Mexico
State University, 1980-2004.

Research Associate (Postdoctoral Fellow), Chemistry Department,
University of Wisconsin-Madison, 1978-1980. Adviser: Walter
Blaedel.

CITATIONS and PUBLICATIONS: **H Index –216** (Google Scholar); >180,000 citations of
1300 publications).

**Highly Cited Researcher, Engineering and Chemistry,
2014-2024** (Ranking among the 1% of most cited researchers in
their respective fields), Thompson Reuters; Clarivate Analytics.

Member of the **USA National Academy of Inventors**

Member of the **European Academy of Engineering (EAE)**

AWARDS and HONORS: **Heyrovsky Memorial Medal** for excellence in Electrochemistry
(Academy of Science of the Czech Republic), 1994.

1999 American Chemical Society Award for *Analytical
Instrumentation*.

2006 American Chemical Society Award for *Electrochemistry*.

**‘Citation Laureate’ Award-ISI Institute- World Most Cited
Scientist in Engineering** during the 1991-2001 and 1995-2005
periods.

NSF - Special Creativity Award, 2008.

Recipient of the 1990 NMSU **Westhafer Award** for excellence in
research.

Recipient of the 2001-2002 NMSU **Manasse Chair**.

Regents Professor, NMSU First Regents professor, 2002- 2004

2007 ASU Faculty Achievement Award for Cutting-Edge
Research

1999 Fellow of the Japanese Society for the Promotion of Science.

Honorary Professor – National University, Cordoba (Argentina),
2003.

Electrochemistry Communications Elsevier Award – 2005.

Honorary Member – National Institute of Chemistry, Slovenia – 2007.

Honorary Doctorate Causa– Complutense University, Madrid (Spain) - 2007.

Nanyang Professor - Nanyang Technological University, Singapore, 2007- 2012.

Fellow of the American Institute for Medical and Biological Engineering (AIMBE), 2009.

Honorary Doctorate Causa–Alcala University, Alcala (Spain)- 2011.

Honorary Professor – Beijing Science and Technology University (USTB), Beijing (China)- 2011.

Breyer Medal of the Australian Chemical Institute – Perth, Australia (2012)

Kapp Lecturer, University of Virginia , Richmond, VA (2012)

Best Teacher Award, UCSD- Dept of Nanoengineering (2012)

Honorary Doctor- Central Michigan University (2012)

Spiers Memorial Award- Royal Society of Chemistry (2013)

Fellow, Royal Society of Chemistry (2013)

Highly Cited Researcher (Ranking among the 1% of most cited researchers in both Engineering and Chemistry), Thompson Reuters (2014-2023)

Thompson Reuters List of 2015 **World's Most Influential Scientific Minds**

Listed in the World **2013 Analytical Power List** (100 most influential people in the analytical sciences).

Named as one of “**The World’s Most Influential Scientific Minds**” (2014) Thomson Reuters (both engineering and Chemistry Categories).

Sir Louis Matheson Distinguished Visiting Professor, Monash University (Australia), 2015-2018.

Honorary Professor- Fudan University (China), 2016.

Honorary Professor - Kunming University of Science and Technology (China), 2016.

Honorary Professor- Charles University (Czech Rep), 2017.

Honorary Professor- University of Medicine & Pharmacy (UMF), Cluj, (Romania), 2017.

Honorary Doctor Causa- Comenius University (Slovakia), 2018.

Electrochemical Society (ECS) Sensor Outstanding Achievement Award, 2018.

European Society of Electroanalytical Chemistry (ESEAC) Lifetime Achievement Award, 2018.

Czech National Academy of Science, Heyrovsky Honorary Medal, 2018.

Charles N. Reilley Award, Society for Electroanalytical Chemistry (SEAC), 2019.

ECS Fellow, 2019.

Talanta Medal, 2021.

IEEE Sensor Achievement Award, 2021

Inaugural IUPAC International Medal for Analytical Chemistry, 2021

Tuba Turkish Academy Award, 2022

R. Adams Award in Bioanalytical Chemistry (Pittcon.), 2023
Member, European Academy of Engineering (EAE), 2019-present.

Member, US Academy of Inventors (NAI), 2022-Present.

Member, European Academy of Science and Arts (EASA), 2019-present.

Member, Turkish Academy of Science (TUBA), 2022- Present.

Member, Albanian Academy of Science, 2024- Present.

American Chemical Society Award for Analytical Chemistry, 2024

Pioneering Contributions to Microrobotic Award, Ontario Robotic Conference 2023.

Woxsen University (in India) has named their Department of Chemistry after Joseph Wang: "**Joseph Wang Department of Chemistry**", 2023.

Distinguished Vilsmeier Lecture, Univ. Regensburg, Germany (July 2024)

Distinguished W. Harris Lecture, University of Edmonton, Canada, (Sept. 2025).

Over 350 **Plenary Lectures and Keynote Addresses** at International Meetings (among over 550 presentations)

Founding and Chief-Editor - *Electroanalysis* (international journal; Wiley-VCH Publishers); 1988-2018

Associate Editor- Wiley Encyclopedia of Analytical Chemistry; 2007-present.

Editorial Advisory Board: ACS Nano, 2015-Present; ACS Sensors, 2015-present; Analyst, 1989-1995; Analytica Chimica Acta, 1992-2007, Advanced Materials Technologies - 2016-present Advanced Electronic Materials - 2014-present; Talanta, 1990-present; ChemElectroChem, 2013 – present; Research (AAAS Science), 2018- present, Digital Medicine, 2017- present, Wiley Nanoscience and Nanotechnology Series, 2007-present, Encyclopedia of Analytical Sciences, 1991-present; Journal of Microfluidics and Nanofluidics, 2005-present, Sensors and Actuators B, 2008- present, Green Analytical Chemistry, 2021-present; Nano-Bio-Analysis, 2010- Present, Medical Devices, 2008-present, Current Robotics Reports, 2020-present, Small Structures, 2020- present; Current Nanoscience, 2011-present, Analytical Instrumentation, 1991-present, Nanoscience & Nanotechnology-ASIA, 2010-present, Electrochemistry Communications, 1998-present, Theranostics, 2011-present, Anal. Letters, 1991-1995, Anal. Communications, 1995-2000, Sensors, 2001-present, Sensors Letters, 2003-present, Current Nanoscience, 2010- present, Research and Reports in Transdermal Drug Delivery, 2011-present; Sensors- 2019-present, Nano-Micro Letters, 2014-present; International Journal for Analytical Chemistry, 2008- present, Advanced Sensor Research, 2022- present; Reviews in Environmental Science and Bio/Technology, 2008-Present, Analysis Europa, 1994-1998, Quimica Analitica, 1997-present; Current Topics in Analytical Chemistry, 1996-present, Int. J. Electrochem. Sci., 2006-present, General Physiology and Biophysics, 1998-present, Croatia Chemica Acta, 1992-present. Journal of Chinese Clinical Medicine international, 2009- present, Advanced Carbon Materials, 2012- present, Advanced Sensors Research, 2022- present.

Research Interests: Our research activity focuses on the fields of nanobioelectronics, wearable sensors, microrobotics and nanomachines. Particular attention is being given to the development of advanced nanomotors, nanorobots and nanoactuators, bioelectronics and electrochemical biosensors, on-body sensor systems, advanced materials for energy harvesting, and nanomaterial-based sensors.

Mentoring: Wang has been the mentor of 50 Ph.D. candidates and over 600 research associates and visiting scholars from all 5 continents.

Web Pages: <http://joewang.ucsd.edu/>

<http://nanoengineering.ucsd.edu/~joewang>

<https://scholar.google.com/citations?user=0DEykT4AAAAJ&hl=en>

JOSEPH WANG - BIOGRAPHICAL SKETCH

Joseph Wang is a Distinguished Professor of Nanoengineering and SAIC Endowed Chair at the University of California San Diego (UCSD). He also serves as the Director of the Center of Wearable Sensors. Dr. Wang obtained his higher education at the Israel Institute of Technology (Haifa), being awarded his D. Sc. in 1978. From 1978 to 1980 he served as a research associate at the University of Wisconsin (Madison), between 1980 and 2004 he was a member of the Chemistry department at NMSU where he held a Regents Professor and a Manasse Chair between 2001 and 2004, and between 2004 and 2008 he served as the Director of the Center for Bioelectronics and Biosensors and a Professor of Chemical Engineering and Chemistry at Arizona State University (ASU), and as Chair of the UCSD Nanoengineering Department between 2014 and 2019. Wang has been the Founding Editor of *Electroanalysis* (Wiley-VCH) and served as its Chief Editor between 1988-2018.

The research interests of Dr. Wang include the development of electrochemical biosensors, nanomotors and nanorobots, wearable sensors, flexible stretchable materials, biomedical applications of nanomachines, printable devices, nanomaterials-based sensors, bioelectronics, biorecognition and clinical diagnostics, design and applications of nanowires, microfluidic ("Lab-on-Chip") devices, microfabrication, biofuel cells, new interfaces, for electroanalysis and electrocatalysis, sensor/recognition coatings, and remote sensing.

He has authored over 1300 research papers, 12 books, 65 patents, and 35 chapters. His current **H-Index (Google Scholar), 216**. Wang's books include "STRIPPING ANALYSIS," "Nanomachines", "Electrochemistry of Nucleic Acids and Proteins", "ELECTROANALYTICAL TECHNIQUES IN CLINICAL CHEMISTRY AND LABORATORY MEDICINE," "BIOSENSORS AND CHEMICAL SENSORS", "BIOSENSORS FOR MONITORING OF ENVIRONMENTAL POLLUTANTS", "NANOBIOSENSING: PRINCIPLES, DEVELOPMENT, APPLICATIONS", and "ANALYTICAL ELECTROCHEMISTRY" (1st, 2nd, 3rd and 4th Eds), and "NANOMACHINES". Since 1980, 40 Ph.D. candidates and 500 research associates have studied with Prof. Wang. Dr. Wang has presented more than 450 invited talks, including 350 plenary and keynote lectures in 60 countries.

Prof. Wang is a member of the **USA National Academy of Inventors (NAI)**, **European Academy of Engineering (EAE)**, **European Academy of Sciences and Arts (EASA)**, of the National Academy of

Science of Turkey (TUBA), and has been a **Thomson Reuters Highly Cited Researcher** since 2015 and has been included in the Thompson Reuters List of 2015 **World's Most Influential Scientific Minds**. He was the recipient of a **NSF Special Creativity Award** in 2008, the 1999 **American Chemical Society Award** for Analytical Instrumentation, of the 2006 **American Chemical Society Award** for Electrochemistry, **Electrochemical Society (ECS) Sensor Outstanding Achievement Award**, 2018, **European Society of Electroanalytical Chemistry (ESEAC) Lifetime Achievement Award**, 2018, **Talanta Medal** for Analytical Chemistry (2021), Inaugural **IUPAC Analytical Chemistry Medal** (2021), **2022 Tuba Turkish Academy Presidential Award**, **Heyrovsky Memorial Medal** (of the Czech Republic) for electrochemistry 1994, the **ISI 'Citation Laureate' Award** for being the **Most Cited Scientist in Engineering** in the World (during 1991-2001) and of the **Electrochemistry Communications 2005 Award** for the most cited paper. He has been **Highly Cited Researcher** (ranking among the 1% of most cited researchers in both Engineering and Chemistry) of Thompson Reuters (in 2014-2022). He was ranked as the **most cited** electrochemist in the world in 1995, the '**Most Cited Researcher in Engineering**' during 1995- 2005, and at the 2th place in the ISI's list of 'Most Cited Researchers in Chemistry' for the 1997-2007 period. He is an **Honorary Professor** of *National University of Cordoba* (Argentina), **Honorary Professor** of *Beijing Science and Technology University* (PR China), **Doctor Honoris Causa**, Charles University (Prague), **Honorary Member** of the National Institute of Chemistry (Slovenia), and **Honorary Doctor Causa** of *Complutense University* (Madrid, Spain), **Doctor Honoris Causa**, University of Alcalá (Alcala, Spain), 2012 **Breyer Medal** of the Australian Chemical Institute, 2013 **Spiers Memorial Award** of the British Royal Society of Chemistry, **Czech National Academy of Science, Heyrovsky Honorary Medal**, 2018, a **Nanyang Professor** of NTU (Singapore), **Honorary Doctor** of *Central Michigan University* (2012), **Honorary Professor** of Fudan University (China), a **Fellow** of the *American Institute for Medical and Biological Engineering* (2009) and a **Fellow** of the *Royal Society of Chemistry* (2013) and of the *ECS* (2019). He was listed in the 2013 *Analytical Power List* of worldwide 100 most influential people in the analytical sciences. He is the recipient of the 1990 **Westhafer Award for Research** (NMSU's highest academic award) and of the **2007 ASU Faculty Achievement Award**.

Wang has been the Founding Editor and Chief-Editor of the international journal *Electroanalysis* (Wiley-VCH) for 3 decades (1988-2018). He has been a member of the Advisory Editor Board of 25 other international journals including *ACS Sensors*, *ACS Nano*, *Advanced Materials Technologies*, *Analytica Chimica Acta*, *Advanced Electronic Materials*, *Analyst*, *Talanta*, *Analytical Letters*, *Analytical Instrumentation*, *Anal. Communications*, *Sensors and Actuators B*, *Electrochemistry Communications*, *Research (AAAS/Science)*, *Journal of Microfluidics and Nanofluidics*, *Small Structures*, *Sensors*, *Sensor Letters*, *Theranostics*, *Advanced Sensor Research*, *Current Nanoscience*, *International Journal for Analytical Chemistry*, *Advanced Sensors Research*, *Analysis Europa*, *Int. J. Electrochem. Sci.*, *Encyclopedia of Analytical Sciences*, *Current Topics in Analytical Chemistry*, *Quimica Analitica*, *General Physiology and Biophysics*, *Egyptian J. Anal. Chem.* and *Croatia Chimica Acta*.

For more information visit our website: <http://nanoengineering.ucsd.edu/~joewang>

Google Scholar Link: <https://scholar.google.com/citations?user=0DEyKT4AAAJ&hl=en>

REPRESENTATIVE PUBLICATIONS (From over 1300 papers; H Index 2016)

“Nanoparticle-modified microrobots for in vivo antibiotic delivery to treat acute bacterial pneumonia”, Zhang, F., Zhuang, J., Li, Z. *et al. Nature Materials* 21 (2022) 1324.

“Towards multifunctional robotic pills“, R. Mundaca-Urbe, N. Askarinam, R. H. Fang, L. Zhang, J. Wang. (2023), *Nature Biomedical Engineering*, <https://doi.org/10.1038/s41551-023-01090-6>
An epidermal patch for the simultaneous monitoring of haemodynamic and metabolic biomarkers, S. Xu and J. Wang, *Nature Biomedical Engineering*. 5 (2021) 737–748.

Closing the loop for patients with Parkinson disease: where are we?, H. Teymourian, F. Tehrani, K. Longardner, K. Mahato, T. Podhajny, J.-M. Moon, Y. G. Kotagiri, J. R. Sempionatto, I. Litvan, and J. Wang, *Nature Reviews Neurology* (2022) 18, 497-507.

“Electrochemical glucose biosensors”, J Wang, *Chemical Reviews* 108 (2008), 814-825

”Digital health for aging populations“, C. Chen, S. Ding, J. Wang. (2023), *Nature Medicine* 29, 1623–1630. <https://doi.org/10.1038/s41591-023-02391-8>

Wearable Biosensors for Healthcare Monitoring, J. Kim, A. S. Campbell, B. Esteban-Fernández de Ávila, J. Wang, *Nature Biotechnology*, 37(2019)389-406.

Micro/nanorobots for biomedicine: Delivery, Surgery, Sensing, and Detoxification, J. Li, B. Esteban-Fernández de Ávila, W. Gao, L. Zhang, J. Wang, *Science Robot* 2(2017)eaam6431.

An integrated wearable microneedle array for the continuous monitoring of multiple biomarkers in interstitial fluid, F. Tehrani, H. Teymourian, and J. Wang. *Nature Biomed. Eng.* (2022). <https://doi.org/10.1038/s41551-022-00887-1>.

“Multimodal wearable sensors for comprehensive health monitoring“, K. Mahato, T. Saha, S. Ding, S. S. Sandhu, A. -Y. Chang, J. Wang. *Nature Electronics*, 2024, <https://www.nature.com/articles/s41928-024-01247-4>.

“A stretchable epidermal sweat sensing platform with an integrated printed battery and electrochromic display“, L. Yin, M. Cao, K. N. Kim, M. Lin, J. Moon, J. R. Sempionatto, J. Yu, R. Liu, C. Wicker, A. Trifonov, F. Zhang, H. Hu, J. R. Moreto, J. Go, S. Xu, J. Wang. *Nature Electronics* (2022), 5, 694-705.

Smart Materials for Microrobots, F. Soto, E. Karshalev, F. Zhang¹, B. E. Fernandez de Avila, A. Nourhani, and J. Wang, *Chemical Reviews*, 122(2021)365. doi.org/10.1021/acs.chemrev.0c00999

Solubilization of carbon nanotubes by Nafion toward the preparation of amperometric biosensors J Wang, M Musameh, Y Lin, *Journal of the American Chemical Society* 125 (2003), 2408-2409.

A Self-Sustainable Wearable Multi-Modular E-Textile Bioenergy Microgrid System, L. Yin, K. Kim, J. Lv, F. Tehrani, M. Lin, Z. Lin, J. Moon, J. Ma, J. Yu, S. Xu, J. Wang, *Nature Communications.*, 12(2021)1542.

Electrochemical stripping analysis, C. Ariño, C. E. Banks, A. Bobrowski, R. D. Crapnell, A. Economou, A. Królicka, C. Pérez-Ràfols, D. Soulis, J. Wang, *Nature Reviews Methods Primers* (2022), 2, 63, <https://www.nature.com/articles/s43586-022-00155-1>

Enzyme-powered Janus platelet micromotors for targeted therapeutic delivery, Tang, S.; Zhang, H.; Fang, R.; Zhang, X.; Zhang, L., Wang, J. *Science Robotics* 2020, Vol. 5, eaba6137;

Electrochemical biosensors: towards point-of-care cancer diagnostics
J Wang, *Biosensors and Bioelectronics* 21 (2006), 1887-1892.

Bismuth-coated carbon electrodes for anodic stripping voltammetry
J Wang, J Lu, SB Hocesvar, PAM Farias, B Ogorevc, *Analytical Chemistry* 72 (2000), 3218-3222.

Carbon nanotube/Teflon composite electrochemical sensors and biosensors
J Wang, M Musameh, *Analytical Chemistry* 75 (2003), 2075-2079.

Nanomaterial-based electrochemical biosensors, J Wang, *Analyst* 130 (4), 421-426.

Ultrasensitive electrical biosensing of proteins and DNA: carbon-nanotube derived amplification of the recognition and transduction events, J Wang, G Liu, MR Jan, *Journal of the American Chemical Society* 126 (2004), 3010-3011.

Electrochemical coding technology for simultaneous detection of multiple DNA targets
J Wang, G Liu, A Merkoçi, *Journal of the American Chemical Society* 125 (2003), 3214-3215

Electrochemical nucleic acid biosensors
J Wang, *Analytica Chimica Acta* 469 (2002), 63-71.

Metal nanoparticle-based electrochemical stripping potentiometric detection of DNA hybridization, J Wang, D Xu, AN Kawde, R Polsky, *Analytical Chemistry* 73 (2001), 5576-5581.

Quantum-dot/aptamer-based ultrasensitive multi-analyte electrochemical biosensor
JA Hansen, J Wang, AN Kawde, Y Xiang, KV Gothelf, G Collins
Journal of the American Chemical Society 128 (2006), 2228-2229.

DNA electrochemical biosensor for the detection of short DNA sequences related to the human immunodeficiency virus, J Wang, X Cai, G Rivas, H Shiraishi, PAM Farias, N Dontha
Analytical Chemistry 68 (15), 2629-2634.

Can man-made nanomachines compete with nature biomotors?
J Wang, *ACS Nano* 3 (2009), 4-9.

Mismatch-sensitive hybridization detection by peptide nucleic acids immobilized on a quartz crystal microbalance, J Wang, PE Nielsen, M Jiang, X Cai, JR Fernandes, DH Grant, M Ozsoz, *Analytical Chemistry* 69 (1997), 5200-5202

Superhydrophobic alkanethiol-coated microsubmarines for effective removal of oil
M Guix, J Orozco, M García, W Gao, S Sattayasamitsathit, A Merkoçi, and J. Wang, *ACS Nano* 6 (2012), 4445-4451.

Thick-film electrochemical immunosensor based on stripping potentiometric detection of a metal ion label
J Wang, B Tian, KR Rogers, *Analytical Chemistry* 70 (1998), 1682-1685