



J. Wang

The author presented on this page has recently published his **10th article** in *Angewandte Chemie* in the last 10 years:

“Micromotor-Based High-Yielding Fast Oxidative Detoxification of Chemical Threats”: J. Orozco, G. Cheng, D. Vilela, S. Satayamitsathit, R. Vazquez-Duhalt, G. Valdés-Ramírez, O. S. Pak, A. Escarpa, C. Kan, J. Wang, *Angew. Chem.* **2013**, 125, 13518–13521; *Angew. Chem. Int. Ed.* **2013**, 52, 13276–13279.

Joseph Wang

Date of birth:	January 8, 1948
Position:	Distinguished Professor, University of California, San Diego
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Homepage:	http://joewang.ucsd.edu/index.php
Education:	1968–1972 BSc, Technion–Israel Institute of Technology 1978 DSc, Technion–Israel Institute of Technology 1979–1980 Postdoctoral position with Prof. W. Blaedel, University of Wisconsin–Madison
Awards:	2006 American Chemical Society Award for Electrochemistry; 2007 Honorary Doctorate, Universidad Complutense de Madrid; 2008 National Science Foundation Special Creativity Award; Honorary Doctorate, Universidad de Alcalá; 2012 Breyer Medal, Australian Chemical Institute; 2013 Spiers Memorial Award and Fellow of the Royal Society of Chemistry
Current research interests:	Development of nanomotors and nanomachines, nanobioelectronics, nanomaterials-based sensors, flexible wearable sensors, electrochemical biosensors, biofuel cells, biorecognition and clinical diagnostics; design and applications of nanowires; environmental and security monitoring; microfabrication; remote sensing
Hobbies:	Travel, movies, walking along the beach

My greatest achievement has been ... the success of my students and postdocs.

The most exciting thing about my research is ... the ability to move to new topics and explore exciting frontiers.

My biggest motivation is ... to make a big difference in people's lives.

The best advice I have ever been given is ... “Follow your dreams”.

I celebrate success by ... partying with my students.

The downside of my job is ... longer hours away from a great family.

My favorite food is ... Mediterranean.

My favorite quote is ... “Take the best that exists and make it better” (Sir Henry Royce).

I like refereeing because ... I am excited to read new science.

The biggest problem that scientists face is ... the limited funding to explore creative high-risk ideas.

What I look for first in a publication is ... its innovative aspects.

The most important thing I learned from my parents is ... that hard work and honesty pay off.

My favorite place on earth is ... my beautiful home town San Diego (CA).

My best investment was ... my education.

How is chemistry research different now than at the beginning of your career?

Chemistry research has changed over the past three decades, reflecting emerging societal needs and the introduction of new capabilities and powerful tools. In addition, access to new knowledge is much easier although the amount of published articles has increased dramatically.

What is the secret to publishing so many high-quality papers?

No secrets, just imagination, vision, passion, fun, persistence, gifted coworkers, and supportive

family. Our research over the years has aimed at introducing completely new creative concepts—rather than improving existing ones—and hence at changing the way we perform chemical sensing, operate our nanomachines, or monitor our environment and our body. Overall, we have focused on developing unique ideas for addressing the right problems, and have pursued these pioneering concepts in a systematic manner with the highest quality possible.

My 5 top papers:

1. “Ultrafast Catalytic Alloy Nanomotors”: U. Demirok, R. Laocharoensuk, K. Manesh, J. Wang, *Angew. Chem.* **2008**, *120*, 9489–9491; *Angew. Chem. Int. Ed.* **2008**, *47*, 9349–9351.
In this paper we demonstrated how the composition of catalytic micromotors can be tailored to impart remarkable power and speed into these tiny machines.
2. “Micromachine-Enabled Capture and Isolation of Cancer Cells in Complex Media”: S. Balasubramanian, D. Kagan, C.-M. J. Hu, S. Campuzano, M. J. Lobo-Castañón, N. Lim, D. Y. Kang, M. Zimmerman, L. Zhang, J. Wang, *Angew. Chem.* **2011**, *123*, 4247–4250; *Angew. Chem. Int. Ed.* **2011**, *50*, 4161–4164.
This study demonstrates for the first time the ability of man-made micromachines to propel in biological fluids and to isolate circulating tumor cells from complex media.
3. “A Self-Powered ‘Sense-Act-Treat’ System that is Based on a Biofuel Cell and Controlled by Boolean Logic”: M. Zhou, N. Zhou, F. Kuralay, J. R. Windmiller, S. Parkhomovsky, G. Valdés-Ramírez, E. Katz, J. Wang, *Angew. Chem.* **2012**, *124*, 2740–2743; *Angew. Chem. Int. Ed.* **2012**, *51*, 2686–2689.
This article introduces the concept of logic-activated therapeutic intervention, which could serve as the core

component of an autonomous medical diagnostic and intelligent drug-delivery system that circumvents the need for external power sources, control electronics, or microelectromechanical actuators.

4. “Acoustic Droplet Vaporization and Propulsion of Perfluorocarbon-Loaded Microbullets for Targeted Tissue Penetration and Deformation”: D. Kagan, M. J. Benchimol, J. C. Claussen, E. Chuluun-Erdene, S. Esener, J. Wang, *Angew. Chem.* **2012**, *124*, 7637–7640; *Angew. Chem. Int. Ed.* **2012**, *51*, 7519–7522.
This paper introduces a new type of micromachine that owes its amazing power to ultrasound, which explosively vaporizes tiny drops of liquid, accelerating the machines like bullets. These powerful fuel-free microbullets could be used one day to drive drugs deep into diseased tissue or shoot genes into cell nuclei for gene therapy.
5. “Epidermal Biofuel Cells: Energy Harvesting from Human Perspiration”: W. Jia, G. Valdés-Ramírez, A. J. Bandodkar, J. R. Windmiller, J. Wang, *Angew. Chem.* **2013**, *125*, 7374–7377; *Angew. Chem. Int. Ed.* **2013**, *52*, 7233–7236.
This study demonstrates for the first time the ability to harvest bioenergy by using a fuel found on human skin—lactate in sweat.

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The work of J. Wang has been featured on the cover of *Angewandte Chemie*: “Micromachine-Enabled Capture and Isolation of Cancer Cells in Complex Media”: S. Balasubramanian, D. Kagan, C.-M. J. Hu, S. Campuzano, M. J. Lobo-Castañón, N. Lim, D. Y. Kang, M. Zimmerman, L. Zhang, J. Wang, *Angew. Chem.* **2011**, *123*, 4247–4250; *Angew. Chem. Int. Ed.* **2011**, *50*, 4161–4164.