

Resume - Dr. Yoseph Bar-Cohen

Dr. Yoseph Bar-Cohen is a physicist specializing in electroactive materials/mechanisms and ultrasonic NDE. He is a Senior Research Scientist and Group Supervisor, Advanced Technologies and the Nondestructive Evaluation and Advance Actuators (NDEAA) Lab (<http://ndea.jpl.nasa.gov/>), at the Jet Propulsion Laboratory (JPL). This lab, which he established in 1991, has been responsible for a series of innovative concepts and mechanisms for planetary explorations, medical, commercial and other applications. Dr. Bar-Cohen is a Fellow of two societies: SPIE and the American Society for Nondestructive Testing (ASNT). He made two notable discoveries of ultrasonic wave phenomena in composite materials: the leaky Lamb waves (LLW) (1983) and the polar backscattering (1983). He received his Ph. D. in Physics (1979) and M.Sc. in Materials Science (1973) from the Hebrew University, Jerusalem, Israel. Currently, he is responsible for developing ultrasonic drill, multi-radiation ferrosource, piezoelectric motors, piezoelectric pump, ultrasonic NDE methods, real time sensing, geophysical probing techniques, haptic interfaces, electroactive polymer actuators (artificial muscles), and high power ultrasonic techniques. The drill and the electroactive polymer related activity were selected as NASA and JPL Technology Spotlights. His prior affiliations include Israel Aircraft Industry (1971-1979), [NRC Postdoc](#) at AFML (1979-1980), SRL (1980-1983) and McDonnell Douglas Corp. (1983-1991). His scientific, engineering and technology accomplishments have earned him two NASA Honor Award Medals - NASA Exceptional Engineering Achievement Medal (2001), and NASA Exceptional Technology Achievement (2006), two SPIE's Lifetime Achievement Awards – NDE (2001) and Smart Materials and Structures (2005), the ASNT's 2002 Lester Honor Lecture Award, the 2006 ASNT Sustained Excellence award, the 2007 SPIE President's Award as well as many other honors and awards.

His initiatives and proactive efforts in the area of Electroactive Polymers led to the [SPIE's EAPAD annual conference](#) (which he has been chairing since 1999), the [WW-EAP Newsletter](#), and the [WW-EAP Webhub](#). This website is part of his JPL's NDEAA website that received over million total hits in about 18-months (from January 1, 2000 to July 2 2001). The highest hits/day was recorded on March 9, 2005, with 9063 total hits and 3626 unique hits. Moreover, the most comprehensive book on the subject of EAP, for which he is the Editor and co-author, was published in March 2001 by SPIE Press. The 2nd edition of this book was published in March 2004. Also, he co-editing a book that is entitled "Biologically-Inspired Intelligent Robots" examining the scientific and engineering states as well as the future possibilities of making robots based on these materials. His edited and coauthored book entitled "Biomimetics – Biologically Inspired Technologies" that provides a high level approach to this topic. This book was published by CRC Press in November 2005. In an effort to promote rapid advances in the development of EAP, [Dr. Bar-Cohen](#) posed in 1999 a challenge to the worldwide research and engineering community to develop a robotic arm that is actuated by artificial muscles to win an [armwrestling match against a human opponent](#). He held the first armwrestling match between EAP actuated robot and human on March 7, 2005 as part of the SPIE Annual International [EAPAD Conference](#). Three arms wrestled with a high school female student (she is now a Caltech student) and she won against all of them. Even though the arms lost the contest, this was a major milestone for the field.

He made significant contributions to NDE of composites and bonded solids as well as aging aircraft structures. He led the development of a crawler, known as MACS (Multifunctional Automated Crawling System) that can serve as a robotic platform for PC board base instruments. As a follow-on effort, he edited and co-authored an ASNT book on the subject of robotics for NDE, which was issued in April 2000. Other contributions include real time monitoring of composites curing, broadband transducers, a LLW device for nondestructive determination of elastic properties of composites and a catheter-based acoustic microscope.

Dr. Bar-Cohen's research and accomplishments with his teams received [extensive media coverage](#) including NASA Press Releases, JPL's Universe, and media articles in daily newspapers (Diariovasco (Spain),

Glendale News Press, Globes (Israel), Haaretz (Israel), LA Times, Maariv (Israel), Newsday, Newsweek Pasadena Start News, The Sunday Times, Yediot Aharonot (Israel), etc.), magazines (Assistive Technologies, Aerospace America, Aviation Week, Business Week, Computerworld (Switzerland), Discover, EE Times, International Journal of Advanced Robotic Systems, New Scientist, Newsweek, Smart Business, Orthotics and Prosthetics Business News, Poptronics, Popular Science, Rosh Gadol (Israel), Scientific American, Time Magazine, Tech Directions, STROM (Switzerland), etc.), technically related websites (Discovery Channel, Natural History, MSNBC, RobotBooks.com, Nando Times News, etc.), as well as radio (NPR-All Things Considered, BBC, Voice of America, Austria's FM4, etc.) and TV interviews. Dr. Bar-Cohen is listed on over 30 Who's Who Biographic Directories and in the Nov. 2001 issue of Tech Briefs as a Who's Who in NASA. For his contributions to the field of electroactive polymers, [Business Week](#) named him in April 2003 as one of five technology gurus who are "Pushing Tech's Boundaries". Also, he was named the "Artificial Muscle Man" by Popular Science (mirrored by CNN); "Redefining robotics" by OE magazine; and the "unofficial coordinator" of the field of EAP in the cover page article of Scientific American (10/2003).

He made about 330 publications, numerous presentations at national and international conferences, Chaired/CoChaired 38 Conferences/Symposia, has 19-registered patents and (co)Editor/Co-author of 6 books (with one in 2nd edition) and 19 conference proceedings, 79 New Technology Reports. Moreover, he is a member of the

- Editorial Advisory Board of the International Journal of Structural Health Monitoring (IJSHM), since Sept. 2001
- International Journal of Advanced Robotic Systems Editorial Advisory Board (since 2004).
- Scientific Advisory Board of the Institute for the [Acceleration Studies Foundation \(ASF\)](#), Since 2005
- Editorial Board of the "Bioinspiration & Biomimetics: learning from nature" Journal, The Institute of Physics, England <http://www.iop.org/EJ/journal/-page=board/1748-3190/1> (Since Sept. 2005)
- American Biographical Institute, Inc. (ABI)'s Distinguished Research Board of Advisors (Since Jan 2005). <http://www.ars-journal.com/>
- Advisory Board of the Asia Pacific Committee on Smart and Nano Materials (APCSNM) <http://www.smart-nano.org> (Since Nov. 2007)
- Special Invited Member of Editorial Board in 2009 for the Journal of Bionic Engineering (JBE)
- Editorial Board of the journal of International Journal of Smart and Nano of Taylor & Francis Group (Since April 2009, first issue will come out in late 2009).

EDUCATION

Ph. D. (1979), Physics; (1975-1979), The Hebrew University, Jerusalem, Israel

M. Sc. (1973), Materials Science; (1971-1973), The Hebrew University, Jerusalem, Israel

B. Sc. (1971), Physics; (1967-1971), The Hebrew University, Jerusalem, Israel

AFFILIATION HISTORY

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|--------------|--|
| 1991-Present | Senior Research Scientist & Group Supervisor, Advanced Technologies, 355N, NDEAA Lab, JPL, Pasadena, CA. |
| 1983-1991 | Principal Specialist, McDonnell Douglas Corp., Long Beach, CA. |
| 1980-1983 | Sr. Physicist, Systems Research Lab, Dayton, Ohio, at the Air Force Materials Lab. |
| 1979-1980 | Post-doctorate, National Research Council (NRC) award, at the Air Force Materials Lab. |
| 1971-1979 | Sr. NDE Specialist, Israel Aircraft Industry (IAI). |

JPL Promotions history

Group Supervisor, Advanced Technologies, 355N – April 4, 2005 - Present

Acting Group Supervisor, Advanced Technologies, 355N – January 12, 2005

Section Staff – April 2003 to Dec. 2004
JPL Senior Research Scientist – Since June 18, 2001

TEACHING

Mechanical and Aerospace Engineering Dept., UCLA, Los Angeles, CA.
1989-1990 Adjunct lecturer
1990-1993 Adjunct full professor

HONORS AND AWARDS

- 2007 SPIE President's Award, Aug. 29, 2007.
- NASA Honor Award Medal for Exceptional Technology Achievement, June 7, 2006
- ASNT's Award for Sustained Excellence, March 15, 2006
- Co-recipient of the Industrial Robot Highly Commended Award for the paper entitled "Lemur IIb: A Robotic System for Steep Terrain Access," presented at the 8th International Conference on Climbing and Walking Robots (CLAWAR 2005), held in London, UK on Sept. 12 - 15, 2005.
- JPL's Team Bonus Award for leading the highly successful AGA's Quiet Concrete Drill task, July '05
- SPIE's Smart Materials and Structures Lifetime Achievement Award - March 7, 2005
- 64 NASA Class 1 Technical Brief Awards, between 1992-present
- 10 NASA Space Act Awards (5 awards in 2002, 2 in 2003, 2 in 2006, 1 in 2008)
- Fellow of The International Society for Optical Engineering (SPIE), July 2002
- ASNT's Lester Honor Lecture Award for Major contributions to the field of NDT (November 2002)
- 2001 NASA Honor Award: NASA Exceptional Engineering Achievement Medal (Aug. 8, 2001)
- JPL Senior Research Scientist (June 18, 2001)
- SPIE's NDE Lifetime Achievement Award (March 6, 2001)
- Self-initiated and co-developed Ultrasonic Drill (USDC) received the 2000 R&D Magazine award as one of the 100 most innovative instruments.
- JPL's Level A Bonus Award - for achievements in the field of EAP, Nov. 1999
- Nova Award of JPL for Technical Innovation and Leadership, March 1998
- Fellow of the American Society for Nondestructive Testing (ASNT), October 1996
- Nova Award of JPL for Outstanding Achievement in Technology and R&D, May 1996
- National Research Council (NRC) Fellowship Award, June 1979

CERTIFICATIONS

Level III certification 752 – Radiography, Liquid Penetrant and Magnetic Particles (effective till May 2011)

MEMBERSHIP

American Society for Nondestructive Testing (ASNT) since 1979
The International Society for Optical Engineering (SPIE) since 1998

Committees and Subcommittees Membership

ASNT

Ultrasonics Committee [Served as the Chair, October 1995 – October 2001]
Aerospace committees [till 2006]
Research Council

IEEE

Advisor, RAS Technical Committee for Biologically Inspired Robots/Machines or Biomimetic Robots. – April 2007

MRS

Materials Research Society Proceedings and Books Subcommittee (PBSC) [Nov. 2006 – Dec. 2007]

SPIE

Publications Committee [2002-2005]

Nominating Committee [2004]

Fellows Committee [2009]

At JPL

Feb. 1, 2005 – March 2007 JPL’s Senior Research Scientists (SRS) Review Panel

March 1, 2004 – Aug. 2005 JPL’s Division 35 Principal Promotion Advisory Board (PPAB)

Jan. 1, 2009 – March 2009 JPL’s Division 35 Principal Promotion Advisory Board (PPAB)

Jan. 1, 2009 - JPL’s Senior Research Scientists (SRS) Council

WHO’S WHO BIOGRAPHIC DIRECTORIES

1. American Men and Woman of Science, 1991
2. Who’s Who in America, 1991.
3. Who’s Who in the West, 1992
4. Who’s Who Worldwide Business Registry, 1994
5. International Who’s Who of Professionals, 1996
6. Dictionary of International Biography, 1999, 2001, 2002, 2003, 2004, 2005
7. Lexington Who's Who, 1999
8. International Man of the Year for 1999/2000
9. Outstanding Scientists of the 20th Century, 2000 and 2004
10. Who's Who in Polymers and Plastics, Technomics Publishing Company, 2000
11. Leaders of Science, Technology and Engineering, 2000
12. Outstanding People of the 21st Century, 2001, 2002, 2004
13. International Biography Center’s 21st Century Award for Achievement, April 2001
14. International Directory of Distinguished Leadership, 10th & 11th edition, Amer. Biographical Inst. (ABI), April 2001, May 2002, and June 2003.
15. Who’s Who in the 21st Century, First Edition, April 2001
16. Biography Today, New Delhi, India, page 509, Vol. II, 2001
17. National Aviation and Space Exploration Wall of Honor in the new National Air and Space Museum Steven F. Udvar-Hazy Center – Sept. 7, 2001
18. International Directory of Distinguished Leadership, 2002
19. NASA Tech Briefs - Who’s Who in NASA, Nov. 2001, page 22
20. Outstanding Scientists of the 21st Century, IBC, 2000, 2003, 2006, 2008
21. Asia – Men and Woman of Achievement – Reguerdon Sdn. Bhd., August 2002, October 2003,
22. Asia/Pacific Who’s Who – April 2004, Oct. 2004, July 2005 (Vol. VI), April 2007 (Vol. VII), Dec. 2008 (Vol. IX)
23. Asian/American Who’s Who, Oct. 2004, April 2008 (Vol. V)
24. Asian Admirable Achievers, Vol. I, page 43, 2007.
25. Eminent Scientists of Today – 1st Edition, Oct. 2002
26. Great Minds of the 21st Century, Nov. 2002, Nov. 2003, Dec. 2006
27. Empowering Executives & Professional – United Who’s Who, Jan. 2005
28. Distinguished and Admirable Achievers, July 2005
29. Biography Today (Vol. III), Rifacimento International, 2005

30. Who's Who in American Education, 2006-2007
31. Dictionary of International Biography, IBC, The Cambridge Blue Book, 32nd, 33rd and 34th (Sept 2007).
35th (2009)
32. Expert Elite Frontispiece of the International Directory of Experts and Expertise, July 2007
33. 500 Greats Geniuses of the 21th Century, American Biographical Institute, 2008

To return to:

 [NDEAA Webhub](#)