

Joseph (Joe) Andrade

Born July 13, 1941
Hayward, California
Residence Salt Lake City, Utah, USA
Nationality American
Fields Surface Chemistry, Bioengineering
Institution University of Utah
Alma Mater San Jose State University, B.Sc.
University of Denver, Ph.D.
Known for Minimum Interfacial Free Energy Hypothesis for Biocompatibility
Honorary Degree Uppsala University, 2000
Occupation: Professor, Educator, Scientist, Writer
Website: www.statechange.us; www.joeandrade.org;
<http://www.bioen.utah.edu/directory/profile.php>
Spouse Barbara Williams
Children 2 (Tonio, Aaron)

History:

Grandparents emigrated from Fayal and Pico, Azores, Portugal in 1923. Parents Erma, Joe Sr. born in California. Joseph D. Andrade, Jr. (born July 13, 1941) is an educator, scientist, politician, and writer.

Joe graduated from Washington Union High School, Fremont, California in 1959. He attended Univ. of California-Berkeley for two years, dropped out for a year, then graduated in Materials Science from San Jose State University in 1965. He next attended the University of Denver, receiving a PhD. in 1969. His dissertation dealt with the theory and modeling of protein adsorption on polymer surfaces.

He married Barbara Williams in Denver, Colorado in 1966. They have lived in Salt Lake City, Utah, since 1969. Their two children are Tonio and Aaron. They have three granddaughters.

Joe joined the University of Utah in 1969 as an Assistant Professor of Engineering and a Research Instructor in Surgery, working with Dr. Willem Kolff and the new Institute for Biomedical Engineering. He rose through the academic ranks in Materials Science, Bioengineering, and Pharmaceuticals, becoming Distinguished Professor in 2001. Joe retired in 2012 as Emeritus and Distinguished Professor.

He served as Dean of the College of Engineering from 1983 -1987. He served several terms as Chair and co-Chair of Bioengineering and one term as Interim Chair of Pharmaceuticals.

During his scientific research academic career, he authored 125 peer-reviewed papers, edited/wrote seven books, and was issued six patents. He directed some 50 MSc and

PhD students. His awards include an honorary doctorate from Uppsala University in May, 2000 (1). His technical work focused on medical materials (biomaterials) and on biochemical sensors (2). He formulated the minimum interfacial free energy hypothesis for biocompatibility, using synthetic hydrogels and polyethylene oxide-coated surfaces to demonstrate the efficacy of the approach (3). The biosensor work used firefly luciferase bioluminescence and enzyme biochemistry for substrate specificity.

General public science education and critical thinking has been a major interest. He developed the University of Utah's first video-intensive general science telecourse, *Science without Walls: Science in Your World* (4), which was broadcast throughout most of Utah on KUEN for some 20 years, ending in 2012. He was a major force behind the genesis and establishment of The Leonardo - Salt Lake City's Science, Art, Technology Center, which opened in 2011. He continues to serve as a Science Advisor and on its Board of Directors (5).

During 2012 he ran as an unaffiliated candidate for Congress in Utah's District 2 on a *Towards a Sustainable Future* campaign. His platform was very similar to Bernie Sanders' later 2016 platform. He completed a summary of the 2012 run in 2013 as *The RUN: My One Year Experience in Democracy*, which is online and free at www.joeandrade.org.

In late March, 2016 he completed *State Change - A Chemical Fantasy*, a 500 page semi-novel, wherein 29 living, current, right wing ideologs are illegally 'treated' with MDMA-containing chocolate in the hopes of improving their abilities to think rationally and to partially correct their empathy deficit disorder. The book is free and online at www.statechange.us. He is now working on a sequel semi-novel dealing with evil, explosives, and crimes against humanity and the planet. He is also expanding his work with and at www.theleonardo.org.

Books (see also www.joeandrade.org):

State Change: A Chemical Fantasy (novel), Andrade Self-Publishing, 2016, free online.

Science without Walls: Science in YOUR World, Simon and Schuster Publ., 1998

Medical and Biological Engineering in the Future of Health Care, J.D. Andrade, ed., University of Utah Press, 1994.

Artificial Organs, J.D. Andrade, et al., eds., VCH Publ., 1987.

Dynamic Aspects of Polymer Surfaces, J. D. Andrade, ed., Plenum Press, 1988.

Surface and Interfacial Aspects of Biomedical Polymers, J. D. Andrade, ed., Plenum Press, 1985:

Vol. 1 - *Surface Chemistry and Physics* (6 chapters authored)

Vol. 2 - *Protein Adsorption* (2 chapters authored)

Hydrogels for Medical and Related Applications, J. D. Andrade, ed., Amer. Chem. Soc. Symp. Series No. 31, (1976) (7 chapters authored).

References

1. <http://www.uu.se/en/about-uu/traditions/prizes/honorary-doctorates/science-and-technology/>
2. Personal Sensors for the Diagnosis and Management of Metabolic Disorders, R. Davies, DA .Bartholomeusz, and JD Andrade, IEEE Engrg in Med. and Biology Mag., Jan/Feb. 2003, 32-42 (also at www.joeandrade.org).
3. Proteins at Interfaces: Principles, Problems, and Potential, chapter in Interfacial Behavior of Bioproducts, J. Brash and P. Wojciechowski, eds., Dekker, 1996, pp. 19-56 (also at www.joeandrade.org).
4. <https://www.the-scientist.com/commentary/science-without-walls-science-in-your-world-57029>
5. <https://theleonardo.org/board-of-directors>