



Krishnan Rajeshwar (1949-Present)

Distinguished University Professor

College of Science, University of Texas at
Arlington

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Krishnan Rajeshwar, 2005.*

Overview

Dr. Krishnan Rajeshwar is a distinguished professor in the College of Science and Vice President of the Electro Chemical Society. His research focuses on semiconductor Electrochemistry and photocatalysis. In addition to teaching and researching Rajeshwar is also very active in initiatives related to diversity. He currently works with a colleague who runs a National Science Foundation (NSF) minority program called Alliance for Minority Participation (AMP). As the former Associate Dean for the College of Science, Rajeshwar also coordinates the allocation of scholarships to different departments in his school, including the McNair scholarship. He also also received numerous awards including Wilfred T. Doherty Award, American Chemical Society and the Energy Technology Division Research Award of the Electrochemical Society. Some of his publications include:

- M. F. Brugnera, K. Rajeshwar and M. V. B. Zanoni, "Bisphenol A Removal from Wastewater Using Self-Organized TiO₂ Nanotubular Array Electrodes," *Chemosphere* 78, 569-575 (2010).
- N. R. de Tacconi, K. Rajeshwar, W. Chanmanee, V. Valluri, W. A. Wampler, W-Y. Lin and L. Nikiel, "Photocatalytically Generated Bimetallic (Pt-Au/C-TiO₂) Electrocatalysts for Polymer Electrolyte Fuel Cell Applications," *J. Electrochem. Soc.* 157, B147-B153 (2010).
- S. Ham, S. Jeon, M. Park, S. Choi, K-J. Paeng, N. Myung and K. Rajeshwar, "Electrodeposition and Stripping Analysis of Bismuth Selenide Thin Films Using Combined Electrochemical Quartz Crystal Microgravimetry and Stripping Voltammetry," *J. Electroanal. Chem.* 638, 195-203 (2010).
- N. G. Fazleev, M. P. Nadesalingam, W. Maddox, S. Mukherjee, K. Rajeshwar and A. H. Weiss, "Oxidation and Thermal Reduction of the Cu(100) Surface as Studied using Positron Annihilation Induced Auger Electron Spectroscopy (PAES)," *Surface Science* 604, 32-37 (2010).

- L. H. Dall 'Antonia, N. R. de Tacconi, W. Chanmanee, H. Timmaji, N. Myung and K. Rajeshwar, "Electrosynthesis of Bismuth Vanadate Photoelectrodes," *Electrochem. Solid-State Lett.* 13, D29-D32 (2010).

This interview was conducted in 2015.

Early Life and Career

Krishnan Rajeshwar was born on April 15, 1949 to A.P.K. Aiyer, an entrepreneur, and Ponnamal Rajeshwar, a homemaker. He grew up with his sibling and parents in Trivandrum, India. As a child, Rajeshwar remembers how proud his father was of his younger brother who was a physicist. His father's admiration of Rajeshwar's uncle's position of respected scientist influenced the young Rajeshwar; he felt that he too could become a respected member of the scientific community. Realization of this dream at an early age allowed Rajeshwar to focus his educational progress on a career in chemistry within the environmental field.

Rajeshwar completed his undergraduate degree at the University College in India. During his senior year, he recalls the influence of an outstanding professor who first sparked Rajeshwar's curiosity about chemistry and "encouraged [him] to pursue it as a career." Rajeshwar decided to follow this career path and completed a Bachelor of Science in chemistry in 1969. He continued his education at the Indian Institute of Technology, where he earned his master's degree in chemistry in 1971. After graduation, Rajeshwar applied to a doctoral program at the Indian Institute for Science in Bangalore, India where he graduated with a doctorate in solid state chemistry in 1975.

Three months before completing his doctorate, a steel works company in India recruited Rajeshwar and eventually hired him to work as a formulation chemist. Rajeshwar immediately transitioned to his new job upon the completion of his doctorate. After working for a year, he returned to North America to continue his education. Even though he enjoyed his job, he decided he wanted to get back into academia because his heart "was really in research."

Rajeshwar applied for –and was granted– a post-doctoral fellowship at a university in Canada. Post-doctoral work was a great opportunity as it allowed him to work with a faculty member whose research focused on solid state chemistry—an area of study in which he continued to be interested. Shortly afterward the completion of this program, a faculty member from Colorado State University (CSU) - Fort Collins contacted him and told him that there was a post-doctoral opening available at his university in a project that examined oil shale as an alternative source of energy. Rajeshwar accepted the offer and in 1976 he joined CSU as a post-doctoral fellow and later as a research associate. Unfortunately, this was a non-tenure track position, and Rajeshwar left CSU in 1983. He decided to apply for other academic positions; this search brought him to the University of Texas at Arlington (UTA). Rajeshwar liked the university's atmosphere and went on to become an assistant professor at UTA's College of Science in 1983. It was during this period in his career that he began working on the environmental aspects of chemistry. Today Rajeshwar is a distinguished university professor in chemistry and bio-chemistry. He is also the Associate Dean for the College of Science. These responsibilities are in addition to his editorial role for an electrochemical society magazine called *Interface*.

Mentoring Others

Experience has taught Rajeshwar that the scientific field tends to be diverse. Although he finds that very few American students are interested in science and engineering, he is encouraged by the knowledge that his courses draw in numerous international students. He has had the pleasure of working with some of those students on their doctoral and post-doctoral projects. He says that some of his former students are now teaching at universities and working at companies all over the world. Rajeshwar finds his work fulfilling, noting that “This is a hobby that I get paid for. I enjoy teaching, interacting with students, and the feedback I get from them. I love it when students say ‘You make chemistry fun’ or years later when they say that I influenced their careers. Seeing them evolve, [watching] them mature professionally ...that’s the best reward.” He also enjoys traveling and learning about different cultures, “not just scientific aspects of research.” He does admit, however, that raising the money to conduct his research is the least enjoyable part of his job. “It’s a necessary evil.”

Rajeshwar is also very active in initiatives related to diversity. He currently works with a colleague who runs a National Science Foundation (NSF) minority program called Alliance for Minority Participation (AMP). He describes the college of science to undergraduate students and various universities. As the former Associate Dean for the College of Science, Rajeshwar also coordinates the allocation of scholarships to different departments in his school, including the McNair scholarship. Additionally, he is the unofficial mentor for a few students at the University of San Diego. In this capacity, he writes letters for them, he talks to them and encourages them to pursue careers in chemistry.

Fortunately, Rajeshwar has encountered very few difficulties in this career. He recalls that he did have trouble generating a good academic position in the beginning. He believes this may have resulted partly because his doctorate degree in chemistry was not completed in an American university. “The pedigree is extremely important, it essentially forced me to start all over again to prove my [validity].” This setback did not prevent Rajeshwar from pursuing his goal; he comments on resilience, saying “...that is part of the job. You have to have a thick skin in academia. You have to face criticism and move on...its part of the challenge.”

Advice to Young Professionals

A positive outlook is on furthering one’s career, which Rajeshwar keeps in mind as he encourages more minority students who are considering professions in the environmental field to believe in themselves and persevere. He says that environmental jobs are plentiful, but obstacles exist for students of color trying to obtain them. “The opportunities are boundless. The problems we’re facing is trying to identify qualified minority applicants and the few that are available are grabbed up by private companies or academia. We need to do more to open up possibilities among underrepresented groups and show them the grants and scholarships – we need to get more [minorities] people coming through the pipeline. It might take a few more years but it will allow them to be the ones to make an impact.”

For More Information

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