Introduction

Title

Professor Emeritus

Dr. Reddy earned both his B.Sc. (Agriculture, 1977) and M.Sc. (Agriculture Chemistry, 1980) degrees from Telangana Agricultural University (formerly APAU), Hyderabad, India. He completed his Ph.D. in Environmental Quality in 1986 from Colorado State University (CSU), Fort Collins, Colorado. Prof K.J. Reddy worked over 30+ years at University of Wyoming (UW), where he is known for his research focused on CO_2 capture and storage, contaminant remediation, and water quality. Dr. K.J. Reddy served as a Professor, Department of Ecosystem Science and Management, Deputy Director, School of Energy Resources, Chair, Water Resources Graduate Program, and Research Scientist, Water Research Center. Dr. Reddy received highest UW honors, including the John Ellbogen Teaching Award, the George Duke Humphrey Distinguished Faculty Award, and the Andrew Vanvig Lifetime Distinguished Faculty Achievement Award for his exemplary university career.

Teaching, Advising, and Training

As an educator and mentor, Dr. Reddy taught undergraduate and graduate courses in Watershed Water Quality and advised 95 graduate students (29 M.S. and 7 Ph.D., plus 59 as committee member from 4 different colleges) and 27 undergraduate students, guided 10 postdoctoral fellows, employed 6 research scientists, and supported 35 part-time student researchers. Dr. Reddy also engaged younger scholars by training several NSF EPSCoR summer high school students and teachers in his Water Quality Laboratories. Several of his graduate students were recognized and received outstanding thesis and James Warner American Water Works Association awards for their outstanding contributions to scientific research.

Research, Publications and Presentations

As Principal and Co-Principal Investigator, Prof. Reddy secured more than $28 million in competitive research funding from state agencies, federal programs, and industry partners. This funding advanced research in environmental science, fostered cross-disciplinary collaborations, and supported the training and mentorship of undergraduate and graduate students, postdoctoral fellows, and research scientists. Dr. Reddy and his research group published extensively, including 51 refereed journal articles, 15 featured articles, 18 book chapters, and over 200 conference proceedings and abstracts. He edited the book *Coalbed Methane: Energy and Environment* (Nova Science Publishers) and holds multiple U.S. patents. He served on several national and international executive and technical advisory boards and delivered more than 270 presentations at state, national, and international conferences. His international reputation is reflected in 50+ presentations delivered worldwide across 19 countries on 5 continents.

Successful Research Topics

Dr. Reddy and his group discovered an innovative method to effectively remove toxic arsenic compounds from drinking water using cupric oxide (CuO) nanoparticles— addressing a serious public health concern that affects millions worldwide. To advance global awareness of arsenic poisoning of drinking water, Dr. Reddy completed a sabbatical at Harvard University as a visiting Research Scholar under the mentorship of Prof. Richard Wilson, renowned physicist— known for his global arsenic toxicity research. The CuO nanoparticles have shown to effectively remove not only arsenic compounds, but also other toxic elements and pathogens from drinking water.

Prof Reddy and his group pioneered a direct flue gas CO_2 capture (without prior separation) and instantaneous mineralization process, utilizing coal combustion fly ash particles—a technique known as Accelerated Mineral Carbonation (AMC). This research is transforming readily available large quantities of industrial solid wastes into a tool for CO_2 capture, safe storage, and marketable value-added products— now recognized as a key climate solution worldwide. The AMC process offers a promising solution for sustaining and transitioning coal and other CO_2 emitting industries into net-zero carbon and renewable energies. Dr. Reddy and his group is also known for their extensive research work on geochemistry, management, and beneficial uses of Coalbed Methane (CBM) produced water in Western United States.

Weblinks for more details

KJ Reddy 2010 Outstanding Research Award:
https://www.youtube.com/watch?v=XmLv7Fj3MC0

CV: https://docs.google.com/document/d/1l99oMCznKrGo_KZuDIPfTHuPxDMs6HSrHUJ-VvBLHMM/edit?usp=sharing

LinkedIn: www.linkedin.com/in/jayaram-reddy-katta-k-j-reddy-54b212344

ResearchGate: https://www.researchgate.net/profile/Kj-Reddy?ev=hdr_xprf

Contact email: katta@uwyo.edu

Key Publications:

1. Jackson, R.E., and K.J. Reddy. 2007. Trace element chemistry of coalbed natural gas produced water in the Powder River Basin, Wyoming, *Environmental Science and technology*. 41:5953-5959. https://pubs.acs.org/doi/10.1021/es062504o
2. Martinson, C.A., and K.J. Reddy. 2009. Adsorption of arsenic (III) and arsenic (V) by cupric oxide nanoparticles. *Journal of Colloid and Interface Science*. 336:406-411. https://doi.org/10.1016/j.jcis.2009.04.075
3. Reddy, K.J. (ed.) 2010. (Invited) Coalbed Natural Gas: Energy and Environment. Energy Science, Engineering, and Technology Series, *Nova Science Publishers*, Inc., Hauppauge, NY 11788, pp511. https://www.amazon.com/Coalbed-Natural-Gas-Environment-Engineering/dp/1616680369
4. Reddy, K.J., H. Weber, P. Bhattacharyya, M.D. Argyle, D. Taylor, M. Christensen, T. Foulke, and P. Fahlsing. 2010. 1 Instantaneous Capture and Mineralization of Flue Gas Carbon Dioxide: Pilot Scale Study. *Nature Precedings*
5. Reynolds, B.R., K.J. Reddy, and M.D. Argyle. 2014. (Invited) Field Application of Accelerated Mineral Carbonation *MDPI Minerals*. Special Issue.
6. McDonald, K.J., B.R. Reynolds, and K.J. Reddy. 2015. Intrinsic properties of cupric oxide nanoparticles enable effective filtration of arsenic from water. *Nature Scientific Reports*. https://www.nature.com/articles/srep11110