



A PASSION FOR RESEARCH: MEET UBIQUITOUS ENERGY'S VP OF TECHNOLOGY DEVELOPMENT, **RICHA PANDEY**

Ubiquitous Energy is extremely proud of its team of scientists and engineers, who are experts at the forefront of solar technology. In this series of articles, we will be featuring some of UE's key team members who are trailblazing the new frontier of transparent photovoltaics. Transparent photovoltaics is a promising new field in solar technology that has the potential to turn any surface in the world into a solar panel.

Richa Pandey is Ubiquitous Energy's Vice President of Technology Development. A recipient of the 2020 Silicon Valley Women of Influence Award, Richa has been with UE since becoming part of its founding technology team as the first employee in 2012 and has been a driving force in its technology development ever since. Richa has quickly established herself as a distinguished woman in leadership in the energy industry.

We had the opportunity to ask Richa some questions about her interesting background, the path that guided her to focus on this area of technology, and her vision for the future. Enjoy reading our dialogue with Richa, and we look forward to showcasing her knowledge and expertise on a variety of topics in our series of articles.

Q: Richa, you began your collegiate studies in India at the India Institute of Technology (IIT), and finished your PhD at the University of Minnesota working on solar research. What enticed you to pursue research as a career?

A: I earned my undergraduate degree in Chemical Engineering from IIT and went on to do my PhD at UMN in the same field. My interest in solar technology began as an undergraduate while studying the technical challenges photovoltaics faced in competing with fossil fuels. I elected to pursue solutions to these challenges through the interdisciplinary research approach employed by UMN's Chemical Engineering and Materials Science doctoral program. There, I designed new devices, discovered new materials, developed new experimental techniques, and built predictive models to determine how to improve the efficiency of solar cells, a fundamental challenge that has constrained mass-adoption of organic solar technology. My doctoral work at the boundaries between materials science, electrical engineering, and chemical engineering not only helped me gain recognition in the field, but also advanced the state of the science. Seeking to continue innovations in the field, I joined UE to pursue a career in technology development.

Q: When you joined Ubiquitous Energy, you were the first actual hire of the company. As a scientist starting a career in technology development, what drew you to joining a ground floor start up?

A: I personally had always wanted to work in a startup. As a scientist starting a career in technology development it was a unique opportunity to develop an idea from a lab-scale prototype to a market ready product. I was also really excited to hear UE co-founder Miles Barr's vision about transparent PV technology. Additionally, as part of the founding technology team, I was going to play a critical role in defining the technical direction of the company. Based on all these factors, I immediately knew that UE was the right fit for me.

Q: What resources did UE have when you first came onboard?

A: When I started at Ubiquitous, we had an exciting idea with unlimited potential and several patents. Before we built our own state-of-the-art engineering facility in Silicon Valley, we had access to shared labs at a variety of universities. We often had to work around other people's schedules which sometimes meant working the graveyard shift, doing experiments at night and all that fun stuff that comes with them! I was so thrilled to build the initial prototypes that I really enjoyed this part of our journey.

Q: What were some of UE's milestones once you joined the team?

A: During my time at UE, we've designed, fabricated, and tested over one million unique PV devices, steadily improving the core technology and resulting in multiple world record efficiency certifications for visibly transparent solar cells. In 2015, we showcased a transparent PV prototype that received the "Best Prototype Award" for UE's first public unveiling of our technology at the Society for Information Display conference. We have also built other prototypes to demonstrate the feasibility of commercially viable transparent PV window films. More recently, we have also scaled up transparent PV devices from the 1"x1" size used in our R&D lab to large area modules that resulted in UE's first 100 sq ft window façade installation, demonstrating the scalability of the company's transparent PV technology. All of these achievements have resulted in UE attracting global glass and window companies as partners and several rounds of equity financings.

Q: In January of 2020, you were promoted to Vice President of Technology Development. How has that changed your list of responsibilities?

A: In my new role as VP of Technology Development, I am responsible for expanding our new materials pipeline and developing new formulations with improved performance using these new materials. My background in understanding the correlation between molecular properties and device performance allows me to create the perfect synergy between our new materials synthesis and device development efforts. This has significantly expedited our materials discovery process.

Q: What excites you most about the future potential for Ubiquitous Energy?

A: The main thing I really like about UE's technology is that it doesn't have to be constrained to one product. We have strategically chosen to start off by focusing on windows, but from there, the true potential of our technology is that it can be applied to any surface. We can easily take all that we have learned in developing our technology for windows and use a similar approach for a different application, such as portable electronic devices or automobiles. The fact that the possibilities are infinite is what's really appealing. Another thing that's appealing to me on a personal level is that there haven't been many companies that have been successful with organic photovoltaics. For UE to be able to use this completely new PV technology and make a real-life product out of it is very satisfying for me as a scientist.

Q: You have received several prestigious awards, including the 2018 Women in Solar Energy Award and the 2020 Silicon Valley Women of Influence Award. How does it feel to be a leading female scientist in such a new technology industry?

A: I'm proud to have made contributions to advancing solar technology both as an academic and industrial professional. My passion for advancing solar technology is complemented by my commitment, strong work ethic, and integrity. These awards mean a lot to me because they recognize my passion for science in becoming a renowned photovoltaics scientist and my contributions in a leadership role. I hope that receiving these awards also serves as inspiration for millions of girls interested in STEM fields around the world. I am really proud to be seen as a trailblazer for women in tech and specifically in photovoltaics. I can't wait to see what happens next for me, the Ubiquitous Energy team, and female scientists and leaders in the tech industry.