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## Band-Engineered Solar Photocatalysis for Water Purification

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The need for water purification and reuse increased in recent years as many world cities are approaching their Day Zero. The key challenges driving future water research are global change (population and climate), large urban areas, water resources risk management, protection from water, and protection of water. In my research, I am developing novel, efficient, cost-effective band-engineered solar photocatalysis process to purify water. This advanced oxidation process-based project involves multi-disciplinary fundamental research that includes materials engineering for the formulation of visible light-activated semiconductors, understanding of solution chemistry to monitor the fate and transport of endocrine disrupting components, pharmaceutical and personal care products in wastewater, and process development for large-scale water treatment units. The scope of the project is not only limited to treatment processes but also to generate fresh potable water from other water body sources using renewable energy sources to lessen global warming.