

# Mark Llorente



**Graduate Institution:** University of California, San Diego

**Location:** La Jolla, CA

**Graduate Discipline:** Materials Science & Engineering

**Hometown:** San Francisco, CA

## Research Interests:

*My primary research interests are in converting renewable energies into electricity and fuels and creating the infrastructure necessary to utilize them. Under Professor Clifford Kubiak, I am attempting to use quantum dots for photocatalytic reactions. Quantum dots have exotic properties that include tunable electronic bands, efficient light absorption, and multiple exciton generation. Our primary goal is to use these unique properties and energy from the solar spectrum to produce the precursors for liquid fuels, H<sub>2</sub> and CO. By choosing the appropriate quantum dots, ligands, and catalysts we should be able to achieve efficient energy conversion of light to fuels.*

*Other research interests include rechargeable battery technology, increased efficiency and robustness in silicon and dye-sensitized photovoltaic cells, and carbon sequestration.*

## About me:

*I received my Bachelor of Science degree from UC Berkeley in Engineering Physics. At Berkeley, I worked for two years on synthesizing and adjusting the properties of carbon nanotubes and their related materials.*

*During my first year at UCSD under former Professor Edward Yu, I used thermodynamics and material properties to calculate upper efficiency limits of theoretical nanowire architectures made of Group III-V semiconductors.*

*My hobbies include Lindy Hop (swing dancing), Olympic style target archery, cooking, and martial arts. I am learning how to play the drums. After earning my Ph.D, I hope to continue academic research as a post doc and eventually become a professor of Materials Science.*



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