**Photolithography for Photovoltaic Cells Research Report**

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The purpose of my research was to create a pattern on the surface a silicon wafer that would increase the amount of incident light absorbed while reducing the amount of light reflection on a solar cell. I was able to do this through the nine steps of photolithography. First, the wafer was chemically cleaned with methanol, acetone, and deionized water so we could rid it from impurities. Then, SiO2 is deposited onto the wafer because it reacts with the wafer to create a water repelling material. Once the material is made, a uniform layer of positive photoresist is created using spin coating. The wafer then gets heated at 115 degrees Celsius for one minute in order to remove all the solvents from the photoresist coating. The most important part of photolithography is the fifth step when a mask with a projecting pattern is placed onto the wafer so the pattern transfers. If the mask is even slightly misaligned with the wafer, the wafer could be ruined. Once the mask is perfectly in place, UV light shines through the pattern on the mask onto the photoresist. Then, the material gets developed, so the photoresist that was exposed to light will become soluble while the portion that was not exposed to light remains insoluble. After this, the wafer is heated at a high temperature in order to harden the photoresist and improve the adhesion of the photoresist to the wafer itself. Finally, the photoresist can be removed to create a uniform pattern on the wafer.