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The Power of the Sun

The Sun. Our veritable giant. A celestial being, a star at its essence. Her untameable beauty glares, providing life and abundance. She paints the firmament with her grace, and seduces Brother Moon out when the night is nigh.

Have you ever wondered what it would be like to channel the Sun, harnessing her fiery excellence and enclosing her dazzling daylight? To use it to banish the impending dark or to try blessing the waters, with her purifying rays?

In order to harness the power of the Sun, we need to delve into the world of Physics and the photovoltaic effect.

A solar cell consists of crystalline silicon between conductive layers, comprising the top N-layer with a high electron count and the bottom P-layer containing electron vacancies known as holes. The area between them, the depletion region, is where sunlight, composed of photons, dislodges electrons in the photovoltaic effect. Electrons migrate to the N-layer while holes move to the P-layer, generating a current. Metal fingers collect electrons at the top, passing through a circuit (e.g., a light bulb) and returning via an aluminium sheet. Multiple cells can be strung together to form solar panels.

Inspired by my passion for solar energy and helping others, I envision a multipurpose solar-powered water purifier. Its design is simple: a circular lid adorned with solar cells, atop a rectangular enclosure with two outlets. Water poured in is heated by solar cells converting electrical energy to heat, boiling the water. Filters in the purifier trap impurities expelled through the back outlet. Condensed, clean water flows from the front outlet, available for drinking. The solar cells are capable of storing surplus energy in battery banks for cloudy days.

What sets my invention apart? For starters, it uses materials which are readily available. Developing countries do not have a stable electrical supply. We are compensated by one thing: the Sun. The sun is everywhere; she shines cheaply. Why not utilize her power? Its cost-effectiveness is highlighted in the abundance of silicon (the second most abundant element to be exact), its primary constituent. Only a little is needed to produce the cells, about 660grams per panel. Moreover, it's versatile. LED strips festoon the rim to provide a steady pulse of light; it is AI-powered and can notify you when it detects harmful substances in the water. It boasts an innovative user-friendly touch interface with multiple settings depending of the degree of purification required, which with its eye-catching symbols, is easily used by any age demographic. In addition to that, it can power multiple household appliances and even conduct basic maintenance on itself. Most importantly, it is compact (easily tucked into a corner in your kitchen), cost-efficient and eco-friendly, being made from bio plastics.

This purifying system would be an efficacious tool in curbing many global health issues, such as the current Cholera outbreak in Nigeria. I believe it is the defining moment in the journey to end the global water crisis.