Water Purification Utilizing a Carbon Matrix and Fresnel Lens

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With the population of Earth growing at an exponential rate, the need for clean drinking water is becoming much more important in todays society. To combat the problem of water scarcity, especially in underdeveloped regions, the development of renewable purification techniques are drawing a high demand. Water purification techniques can be perfected when used in conjunction with materials that aid to amplify water yield. The combination of graphite and iron acetate when used in conjunction with acid-washed carbon foam, creates a surface that allows for an upward capillary action to take place. This material permits small amounts of water to be separated from the bulk water, allowing for a faster rate of distillation. With an increased level of capillary action, all that is needed is a heat source; in this case, the sun is magnified and focused with a large Fresnel lens. The magnified rays create a hot spot at an average of 190°C, generating steam immediately. To collect the generated steam, the bulk water was inserted into a mason jar with a plexi-glass lid. This allowed for the jar to act as a condenser, collecting water below the fixed container holding the bulk water. With a combination of common materials, water purification can be utilized to create clean water in areas where water scarcity remains to be a growing problem.

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