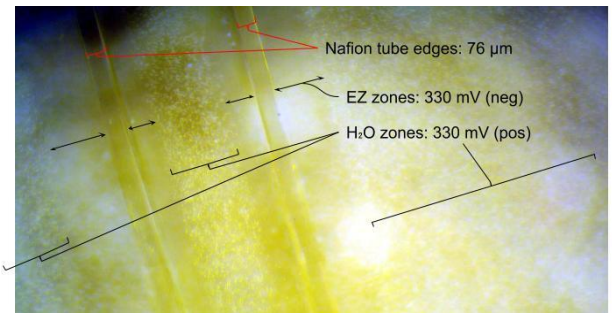
Water Filter/Desalination

Harnessing Pure Water via the Exploitation of Water's Naturally Forming Exclusion Zone and Vitalized Water

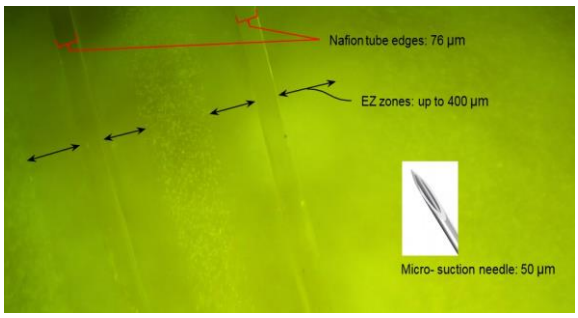
Description

Dr. Gerald Pollack (Univ of WA) discovered an important property of water called the "exclusion zone" (EZ). When light - visible and infrared - contact water, if there is a hydrophilic (water loving) surface present, some of the water is transformed to H_3O_2. These H_3O_2 layers are pure - only hydrogen and oxygen, in liquid form, carrying a negative charge. The amorphous and unfiltered H_2O carries a positive charge.

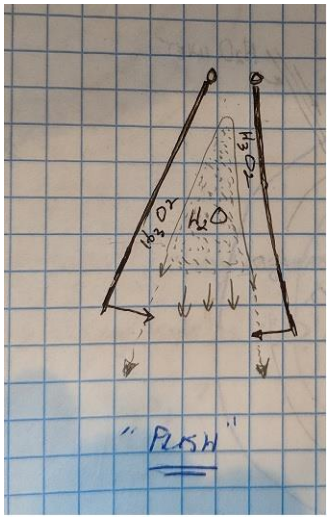
The idea for filtration is to separate the EZ water (H_3O_2) from the amorphous H_2O. The EZ water is technically ultra-pure: by definition, everything but hydrogen and oxygen is "excluded", including salt.



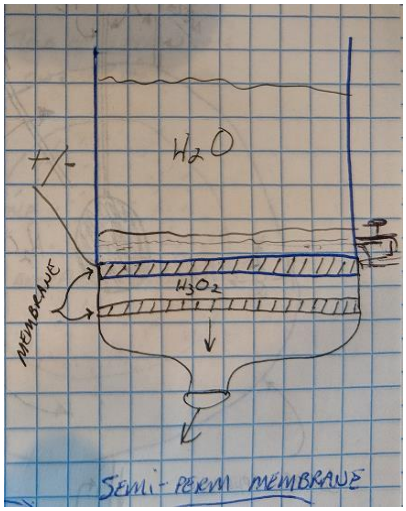
EZ zones surrounding a hydrophilic surface



Extraction needle - approx to scale



Rough sketch of "Push" method. Microspheres remain contained within h_2o: all particles are pushed out



Rough sketch of "Semi-permeable membrane" (carbon) method of filtration

Dunedain has consistently been able to form, observe, and measure an exclusion zone in various types of water. Most recently, we have found that by adding small amounts of vitalized water to ocean water, a usually difficult EZ formation becomes readily apparent.

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Intended Use & Purpose

Initial designs for the water filter device include varied sizes and output volumes. Small models that would serve the needs of a few people (a family, for example) are estimated to be desktop size: Portable, inline with home plumbing. We are considering larger designs that would be incorporated into the hull of large ships.

Potable water will be made available wherever any water (dirty, unfiltered, ocean, etc) is available. We believe the only energy input would be sunlight - visible and infrared. A zero pollution water filter to address clean water availability while drastically reducing filtration costs.

Status

Small scale experiments have successfully proven the ability to first consistently separate the filtered (H_3O_2) water from unfiltered (H_2O) water, then extract that filtered water. Three specific methods have been designed for water separation/filtration:

- Suction: micro-needles extract only filtered H_3O_2 (small scale success)
- “Push”: hinged parallel plates push H_2O and particulates out (small scale success)
- Semi-permeable membrane: voltage driven permeable membranes act as gated channels

Normally, an exclusion zone is difficult to form in salt water. However, if the ocean water is first vitalized, exclusion zones have been able to form - if the salt water is diluted with non-ocean vitalized water. This is a very important step indicating desalination can be performed with this technology very efficiently.

Budget, Resources, Timeline

This filtration and desalination technology could have important implications in providing clean water with very little to no external energy input. Initial experiments are showing the importance of water vitalization: It appears that any water that goes through the vitalization process has an enhanced EZ formation. This EZ formation is crucial to filtration and desalination.

Project	Scope	Resources	Estimate	Duration
EZ Filter - Suction	Small scale POC successful - ramp up to mid-scale, attempt greater volume output with more refined technology, greater number of micro-needles per surface.	Dunedain Mechanical engineers	$250,000	4 months
EZ Filter - Push	Small scale POC successful - ramp up to mid-scale, attempt greater volume output with precision machined test equipment.	Dunedain Mechanical engineers	$250,000	4 months
EZ Filter - Membrane	Beginning carbon membrane experiments now. Lack of equipment is limiting progress. This semi-permeable membrane approach is likely the most promising for EZ filtration.	Dunedain Mechanical engineers Nano-tech	$500,000	6 months

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