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Introduction

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- Earth’s water scarcity issue continues to grow daily
- It is projected that 4 billion people (about 51% of Earth’s population) experience water scarcity issues during at least one month of the year
- A third of the world’s groundwater systems are already in distress

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More water scarcity facts

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- Over two billion people live in countries experiencing high water stress (Reported by the UN in 2018)
- It is projected by 2025 that two thirds of the world will experience water shortage.
- By 2025, the world desal market will be at least 35 billion USD

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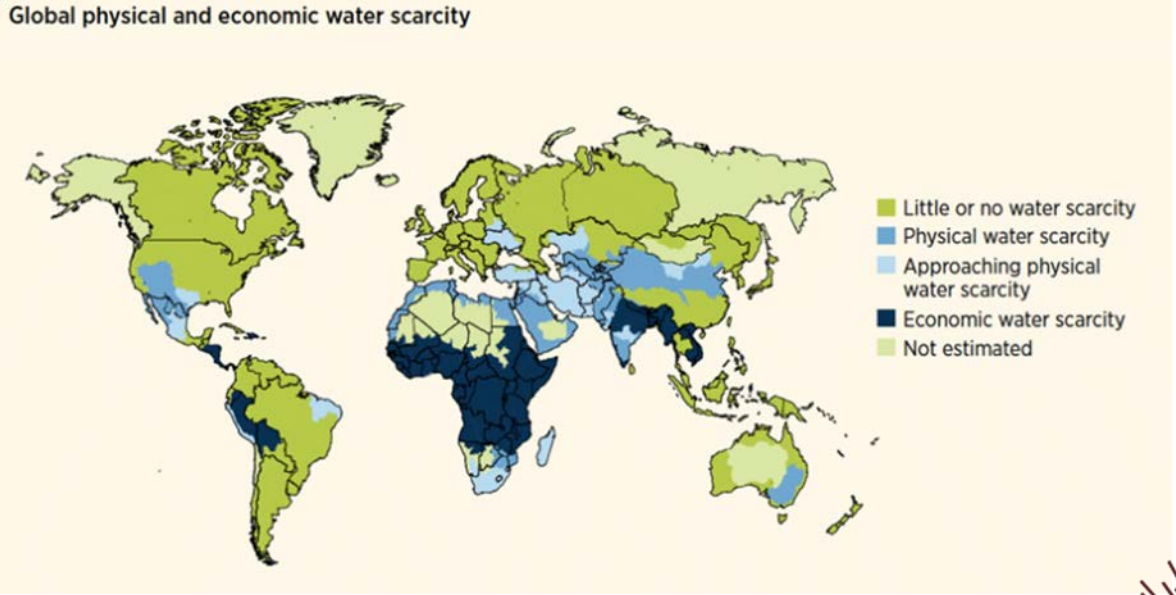
Global water scarcity map - UN 2012 report



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Water Scarcity map - The Washington Post

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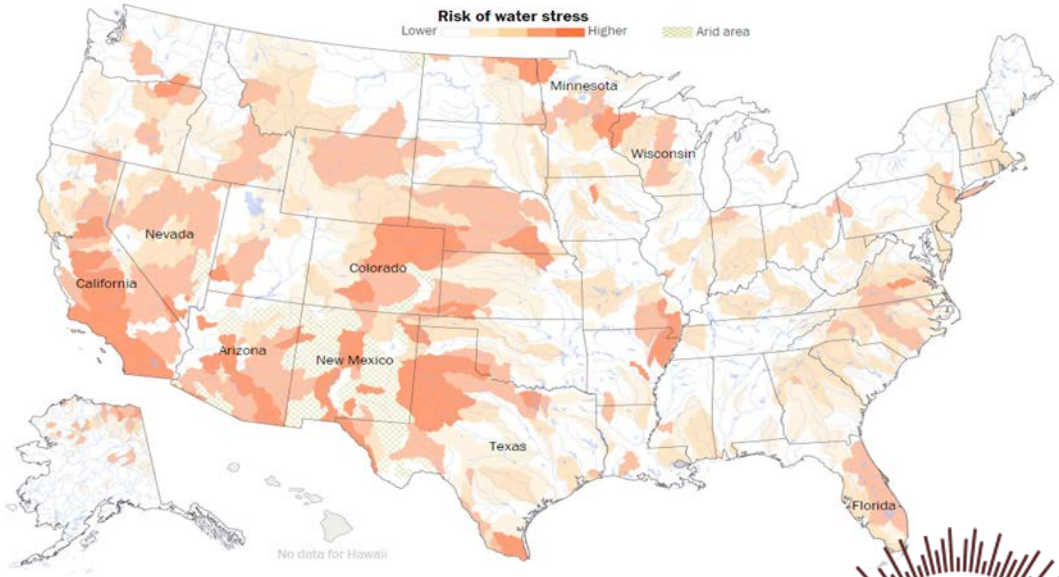

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- A lipid biofilm that is a derivative of lung surfactant
- The biofilm is capable of reducing the content of salt in a single passage from 25-30% in seawater and approximately 20% in brackish ground water.

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United States Patents

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- Patent Number - 8,628,625B2

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Advisors

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- Dr. James Roach, Ph.D. in lipid chemistry and Professor of Chemistry at Cornell Medical School in Qatar.
- Lipoid Company, Germany.

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Biosketch information

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- James D. Roach, Ph.D. - Professor of Chemistry & Assistant Dean of Pre-Medical Education, Cornell University.
- Tom Webb - 1975 graduate of Emporia State University in Business Administration and has over 40 years of business/construction experience.
- Sadhana Ravishankar, Ph.D. - Professor of Microbiology, University of Arizona College of Agriculture.
- Bibiana Law, Ph.D.- Research Scientist, University of Arizona College of Agriculture.
- Cameron Canterbury, Computer and information technology consultant.

Salt accumulation on film in tray

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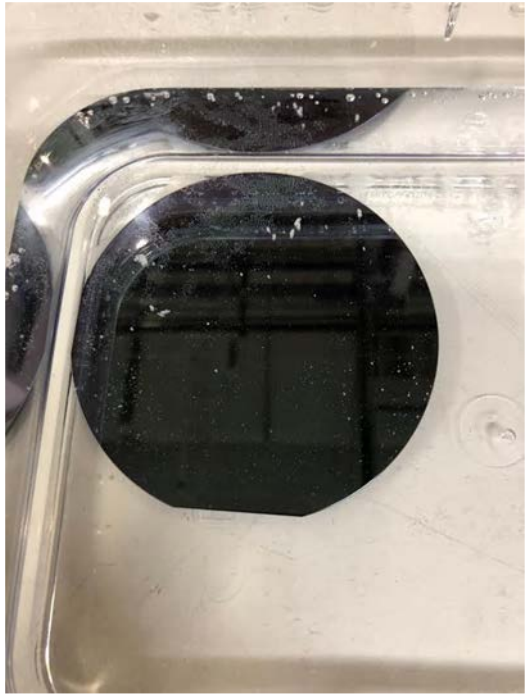

Salt accumulation in tray after trial

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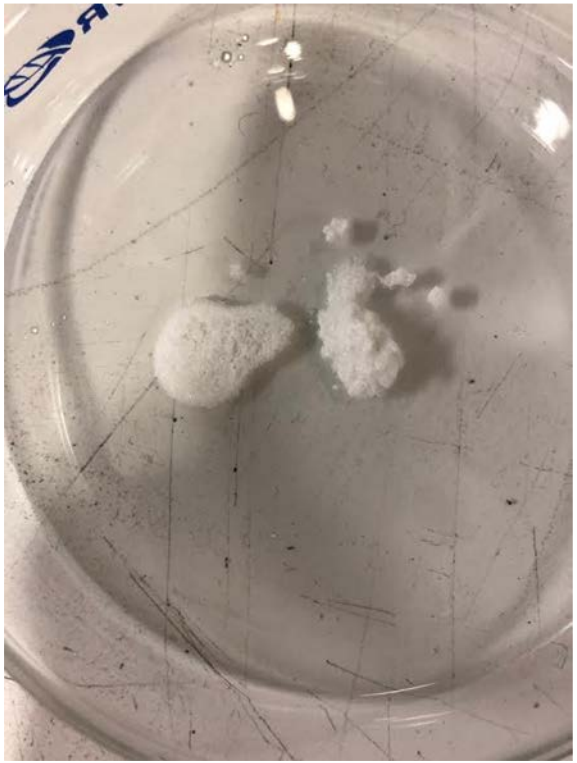

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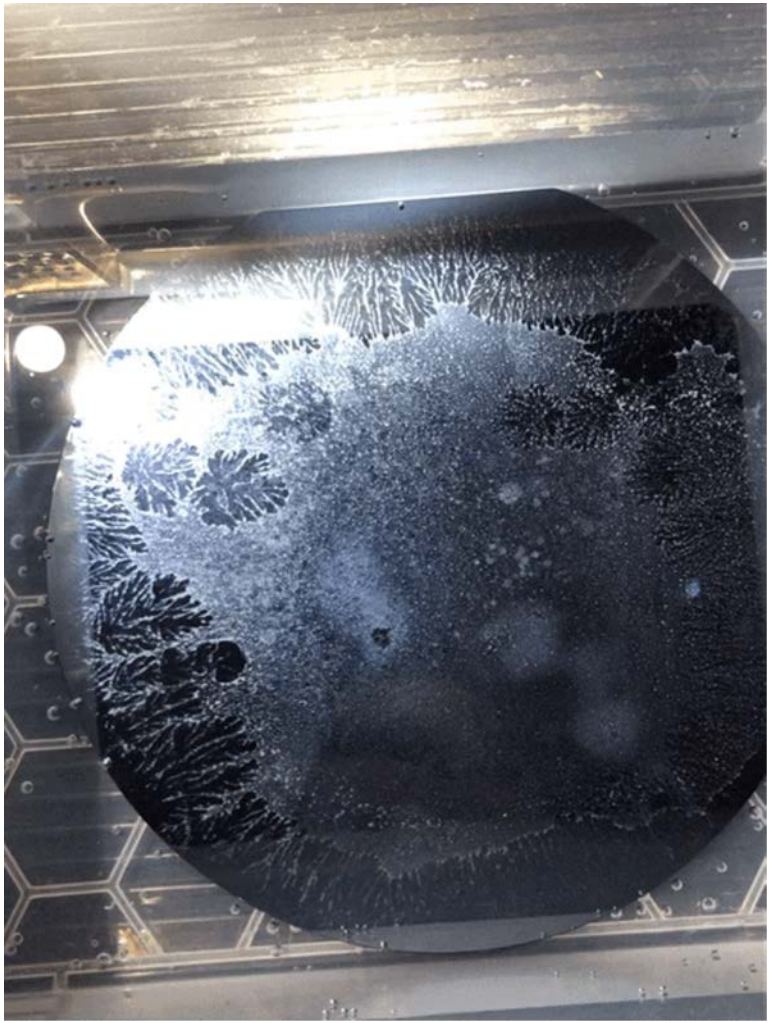

1600 ppm. The energy use is minimal compared to reverse osmosis desalination.

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AFM image of Biofilm surface

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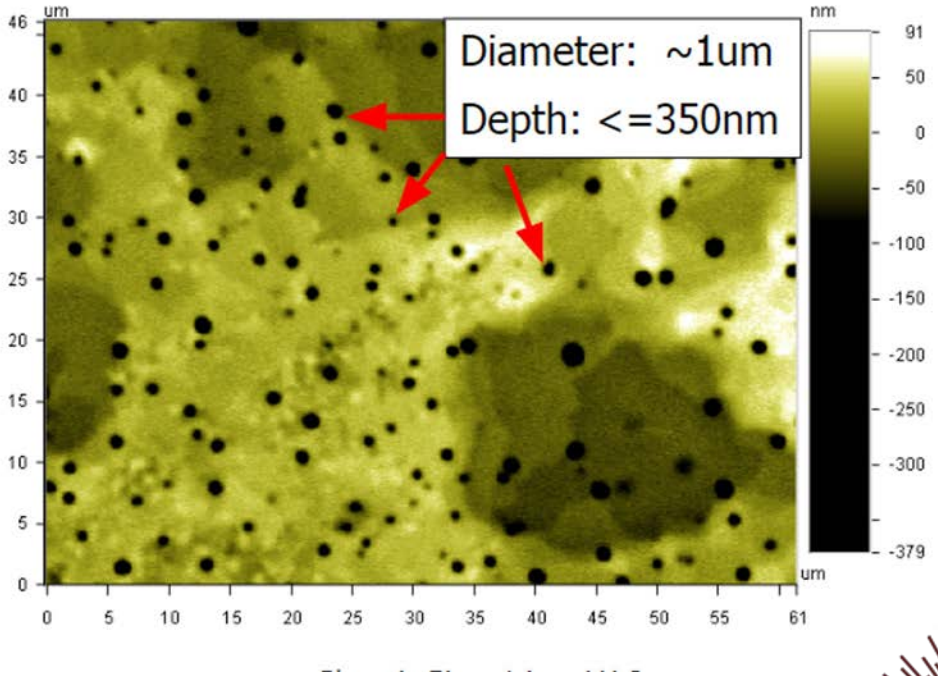
Surface Statistics:
Ra: 27.64 nm
Rq: 40.56 nm
Rz: 441.87 nm
Rt: 469.46 nm

Set-up Parameters:
Size: 640 X 480
Sampling: 96.16 nm

Processed Options:
Terms Removed:
Tilt
Filtering:
None



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Milestones

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- Three methodologies to upscale technology to industrial prototype stage
  a) Bin. Success to 3-fold increase in salt desalination volume.
  b) Column.
  c) Combination

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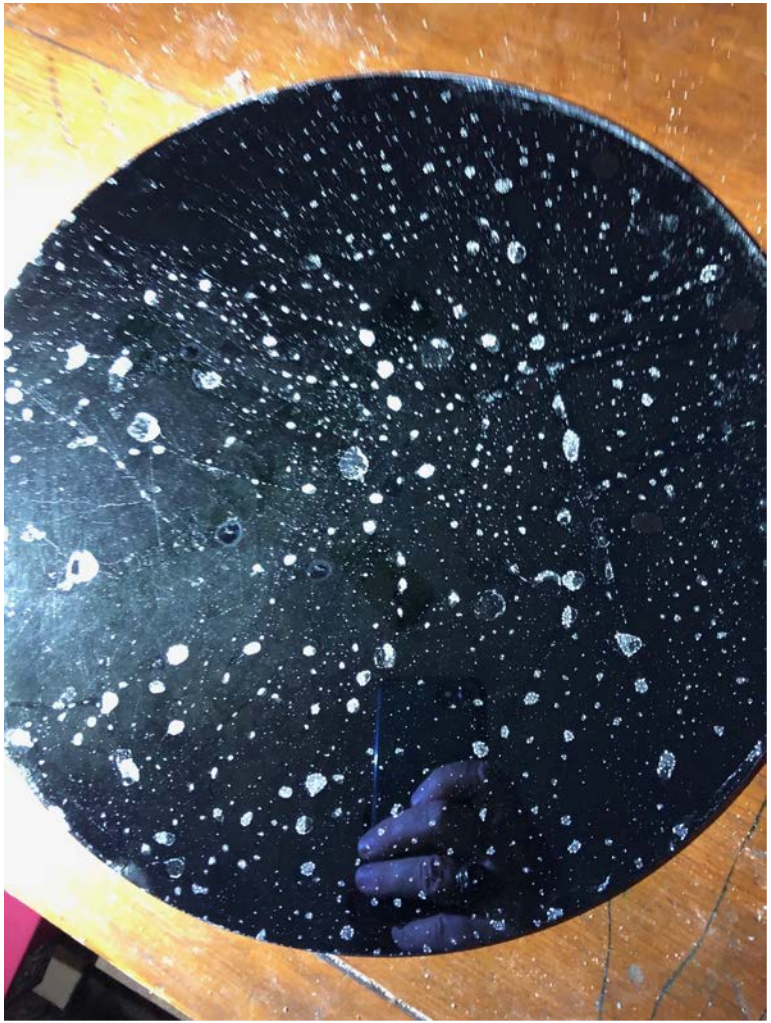

CURRENT STATUS OF LOW-ENERGY DESALINATION PROJECT

We are now using 12-inch silicon disks in our first industrial prototype bin experiments. These silicon disks are the largest commercially available. This set-up allows us to collect the extracted salt to extract lithium from it. We will use the salt to establish sea algae farms which will extract huge amounts of carbon dioxide from the atmosphere. We will use the algae to make synthetic fuel and food pellets for animal and human consumption. We will have four sources of revenue; fresh water, lithium, fuel from algae, and food from algae.

First Industrial Prototype Experiment

First industrial prototype experiment with two 12-inch silicon disks placed inside an aluminum tub and suspended in the saltwater by steel wires. You can observe the captured salt/lipid particles floating in the saltwater after 15 minutes. We will work towards a 2 cubic meter aluminum tub with the 12-inch silicon disks suspended in the tub by a Christmas-tree device.

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