

Problem:

Large scale desalination is not commercially viable

Significance:

Abundant fresh water is limited and crucial for survival

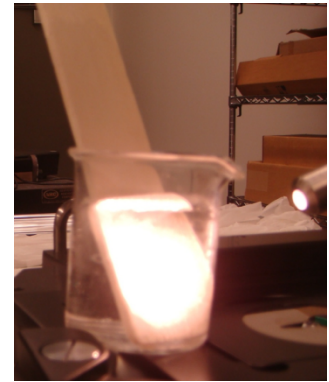
Facts:

- Earth's water supply is 97% salt water, 2.5% ice, and about 0.5% available to be used by humans
- Water disputes increasingly lead to conflict; unlike the fuel crisis, there is no substitute for water
- Ocean contain plenty of water, if desalination was viable
- Current sea water desalination is limited by our ability to economically remove salt buildup
- Superhydrophobics alter the equation, making large scale, commercially viable ocean desalination a game changer

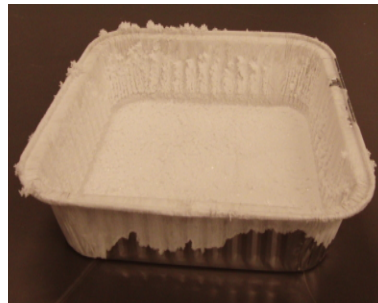
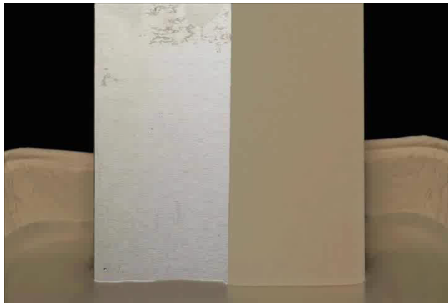
Technical Solution:

ORNL's Superhydrophobic (SH) coatings have two unique features that make large scale commercial desalination viable.

1. These coatings create a pinned layer of air on their surfaces . This pinned air layer prevents salt from attaching to the coating's surface; preventing salt creep, and thus virtually eliminates salt induced corrosion on any surface coated.



Pinned layer of air on coated stick



2. These coatings consist primarily of diatomaceous earth as which is plentiful worldwide and as a result is very inexpensive (i.e. “dirt cheap”).



Advantages of using SH coatings for sea water desalination:

- Makes evaporative desalination of seawater commercially viable
 - Prevents salt creep, keeping salt buildup localized & manageable
 - Inexpensive (the coating material costs is pennies/square yard)
- Easy spray-on application
- Non-toxic
- Inhibits corrosion
- Inhibits bio-fouling
- Salt deposits are easily removed w/o the need to use fresh water
- Can ALSO be used to:
 - Produce harvest minerals and salts from sea water brine
 - Offer electrical, icing, and corrosion protection for circuits/grid

Thank You!

John T Simpson, Ph.D.
Senior Research Scientist
Oak Ridge National Lab

For more video, pictures and information on our ORNL superhydrophobics; please explore more at:

<http://www.ornl.gov/adm/partnerships/tech/superhydrophobic/>

For information on licensing the technology, or finding a solution provider that may already exist in your field-of-use contact:

Chad Riggs
Oak Ridge National Laboratory
Office of Technology Transfer
<http://www.ornl.gov/adm/partnerships>
iggscl@ornl.gov
423.578.0149