

Plasma

- 4th state of matter
- Conductive
- Highly energetic gas
- 99% of the known universe

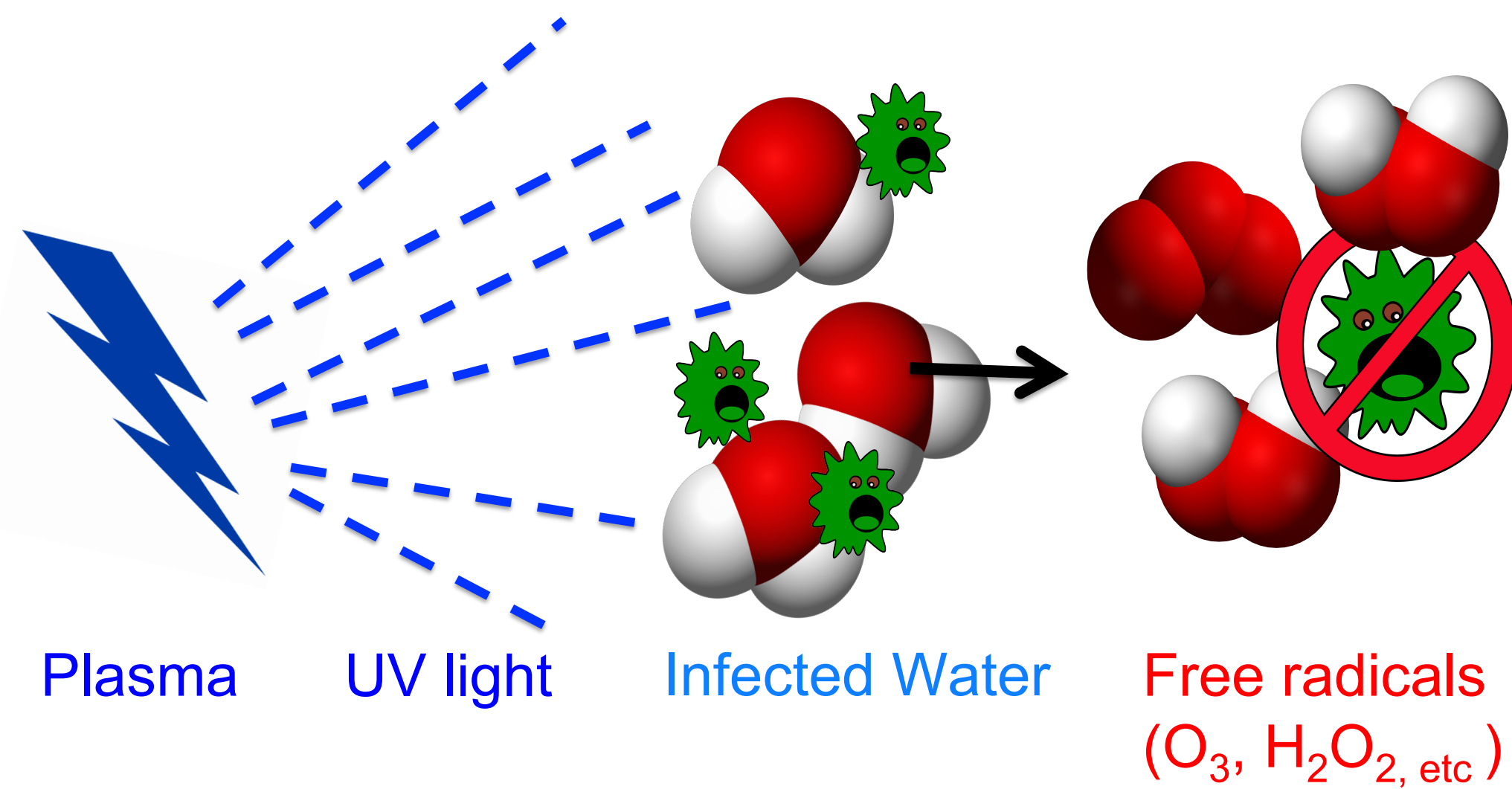
Portable Water Disinfection System

Team Cornflower: Kenny Yau, Robert Treiber, Jon Manninen and Lisa Fantini

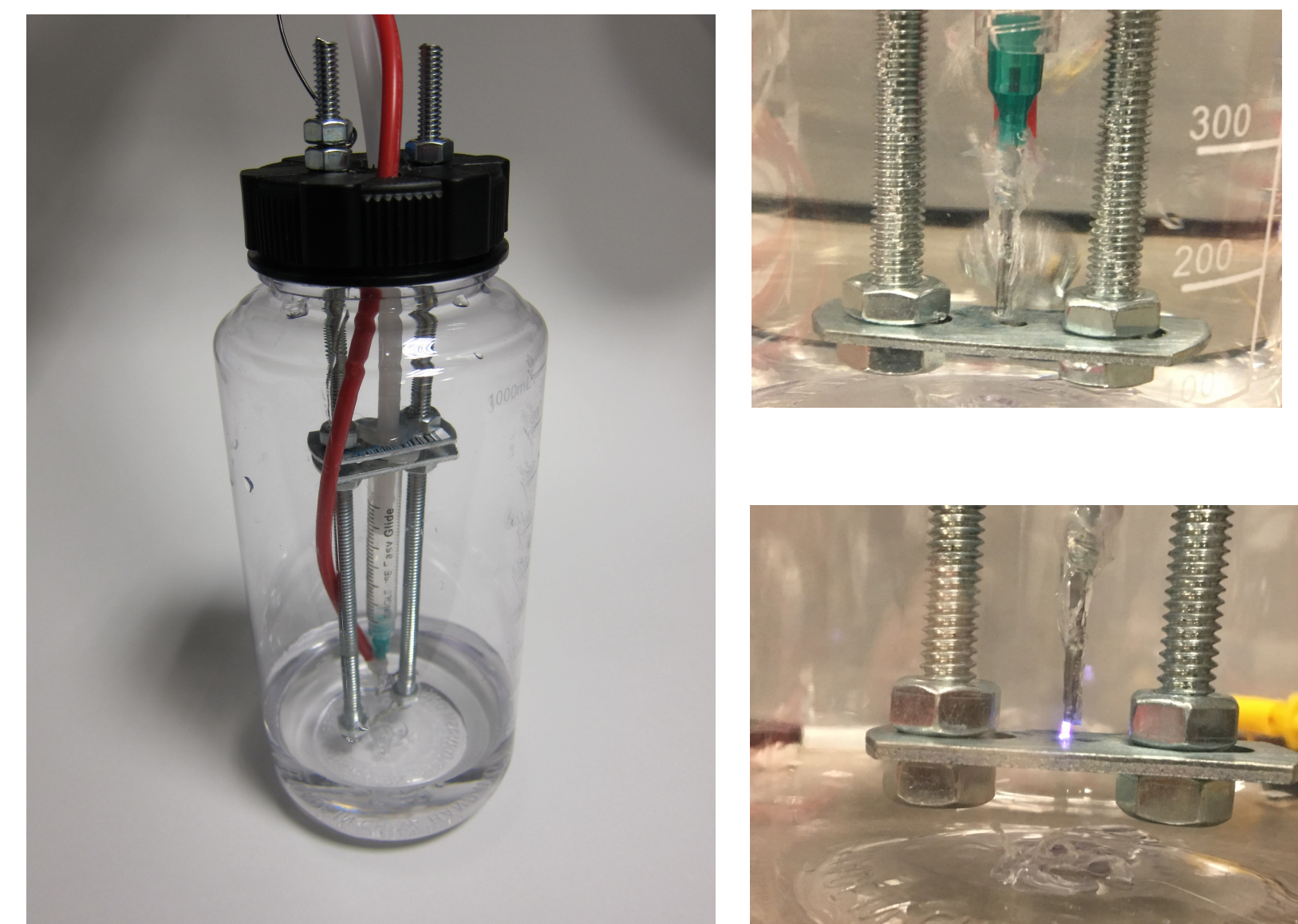


One in every nine people lack access to drinking services.
 One million people die each year due to water borne-illnesses.
 The solution may lie in plasma physics.

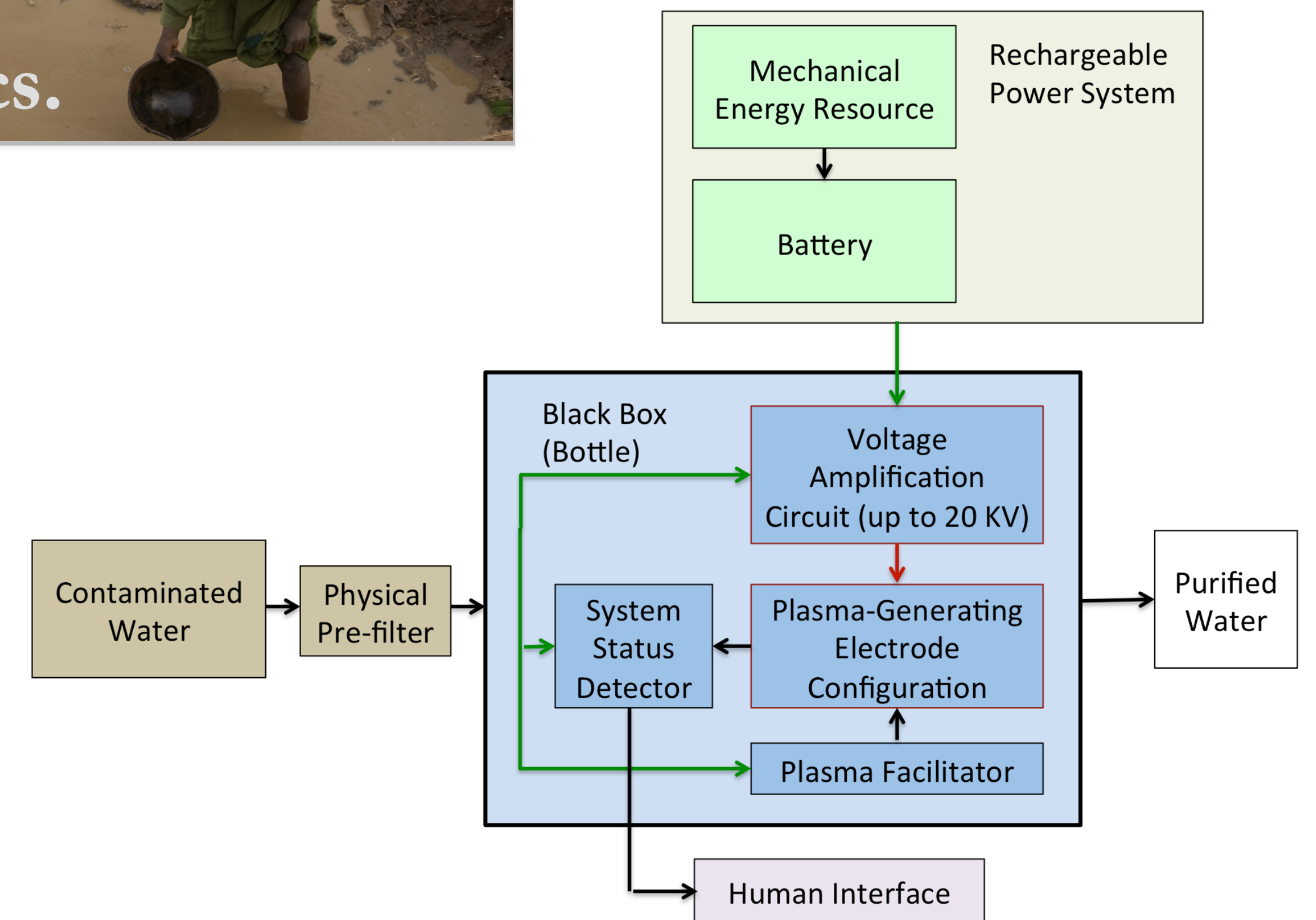
How Plasma Disinfects Water



Our Solution

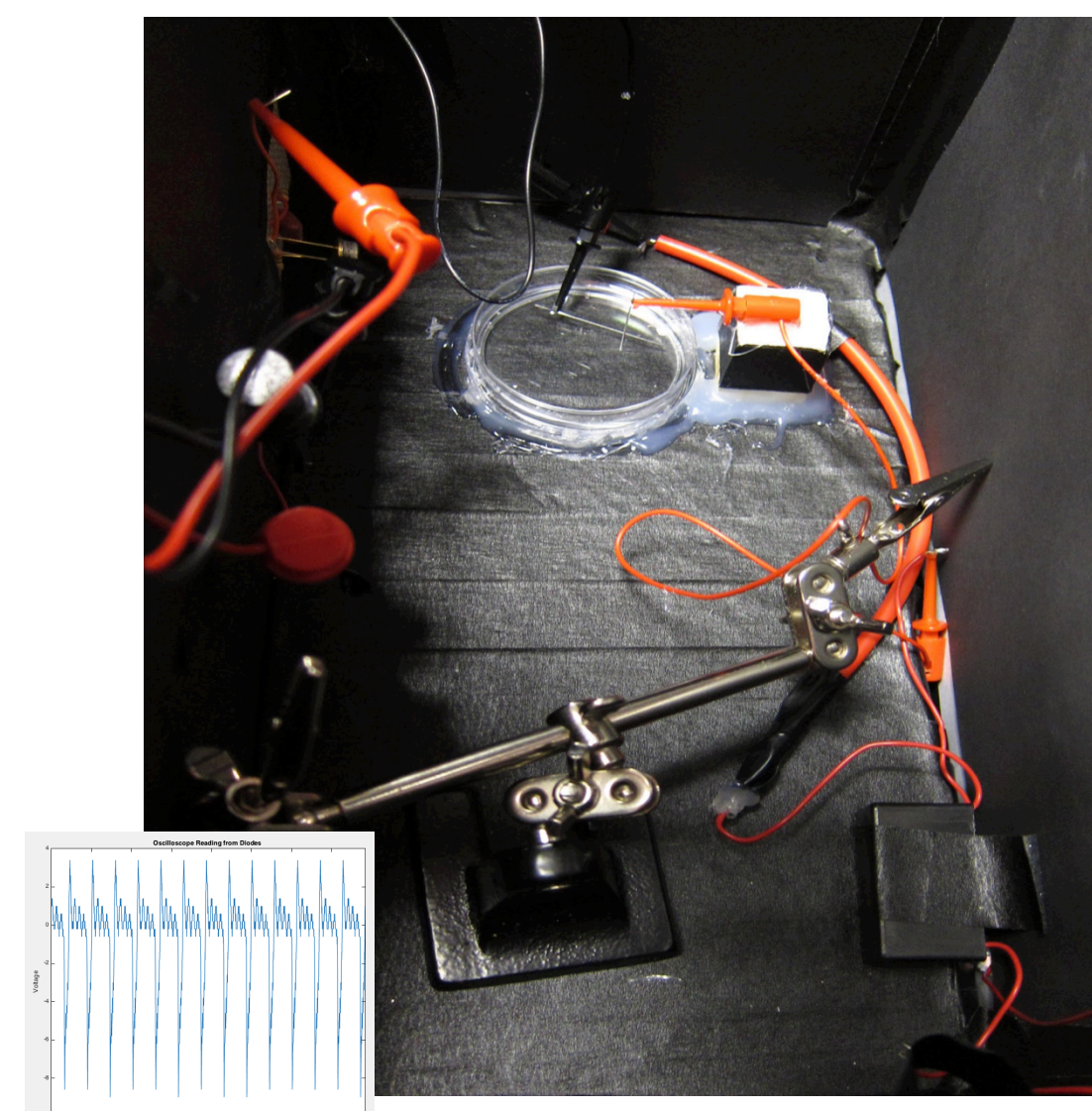
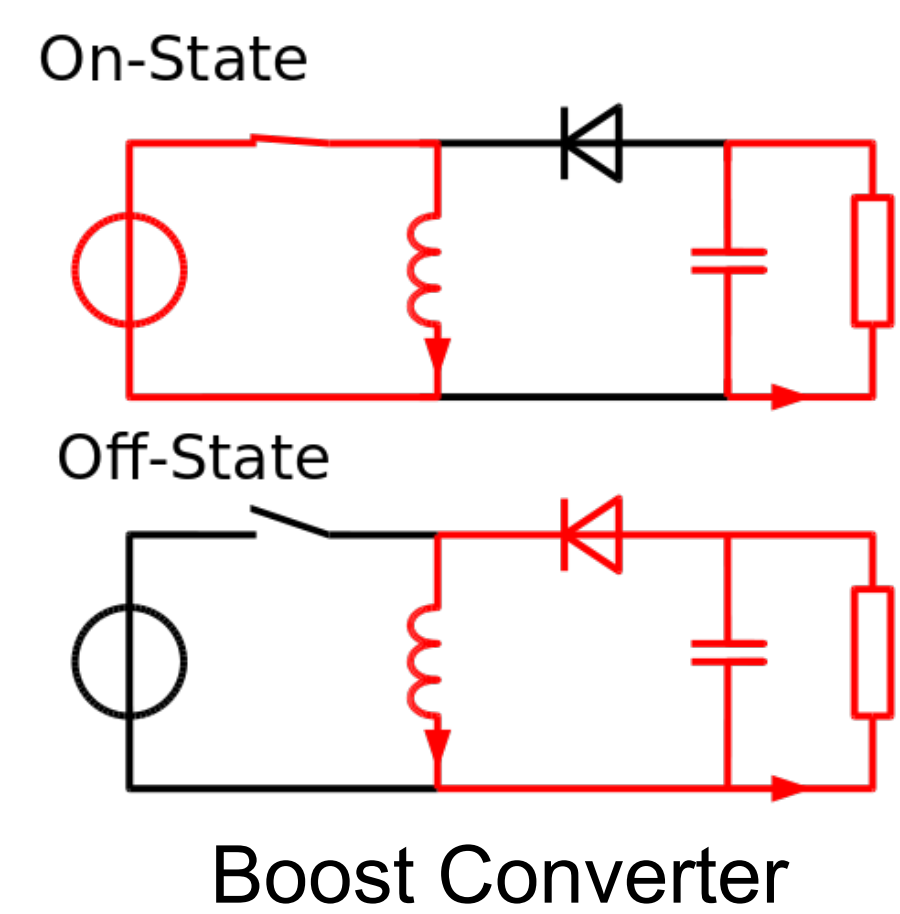


A portable, rechargeable water bottle that disinfects water using plasma



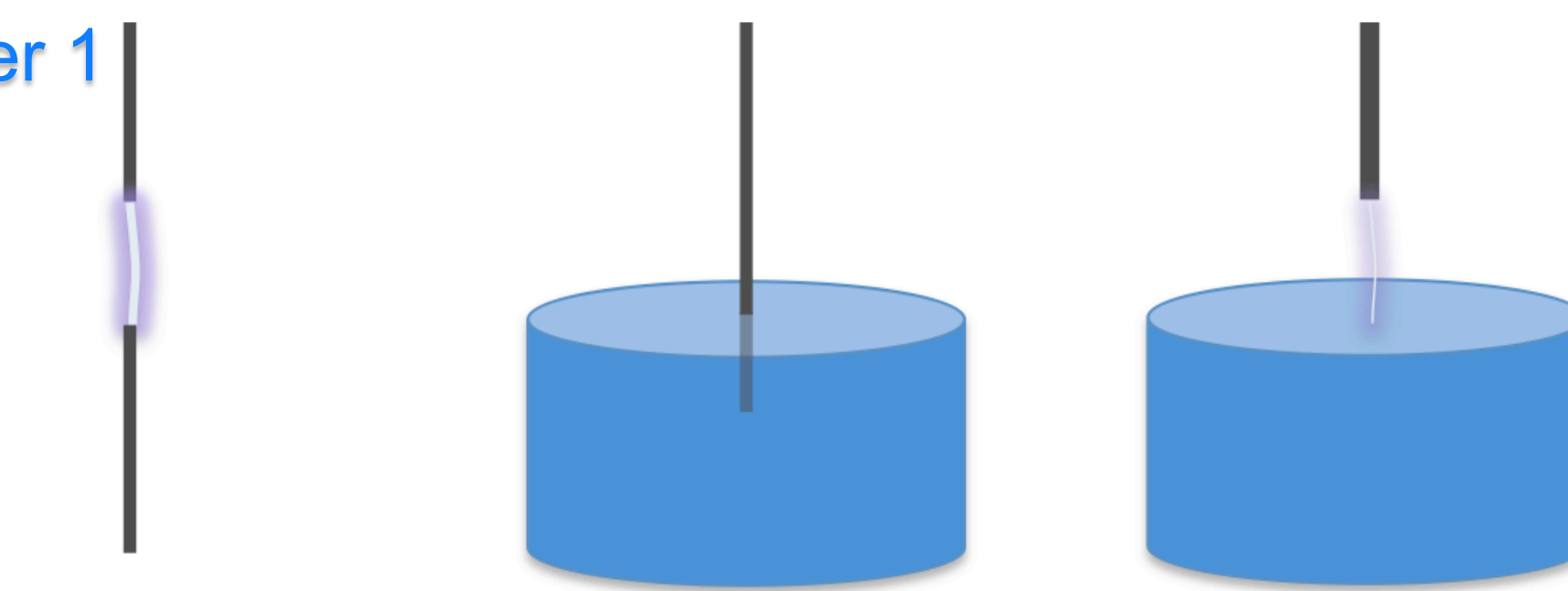
Systems Engineering Diagram

How we Created Plasma

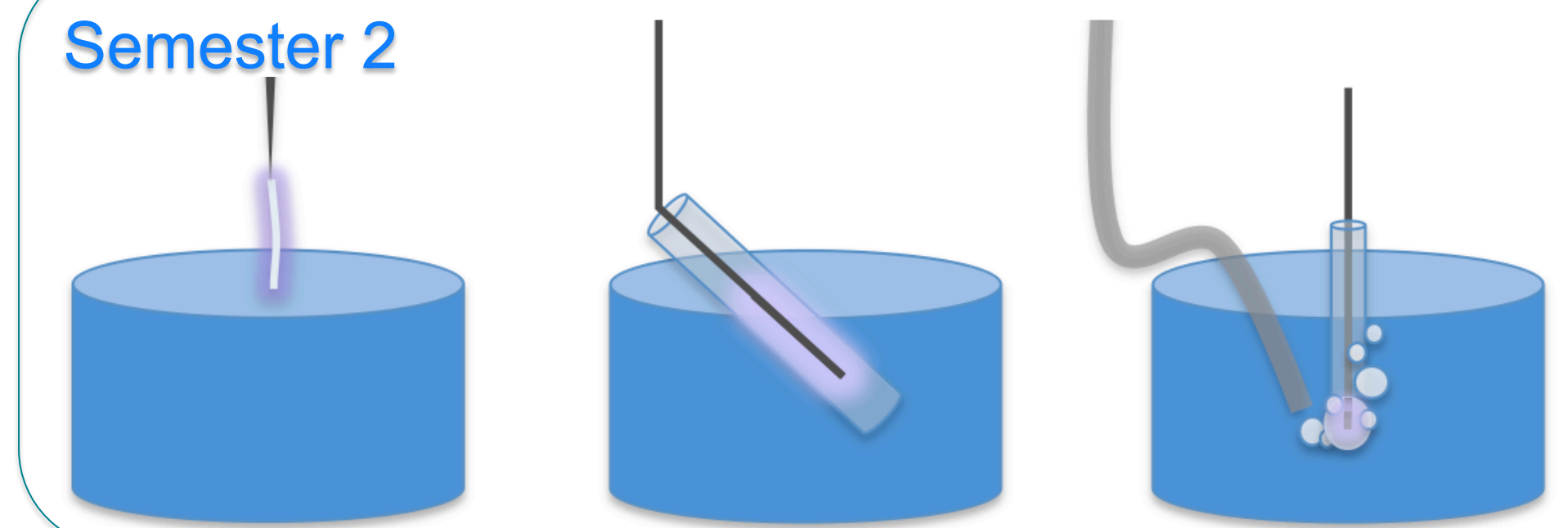


Experimental Set-up

Semester 1

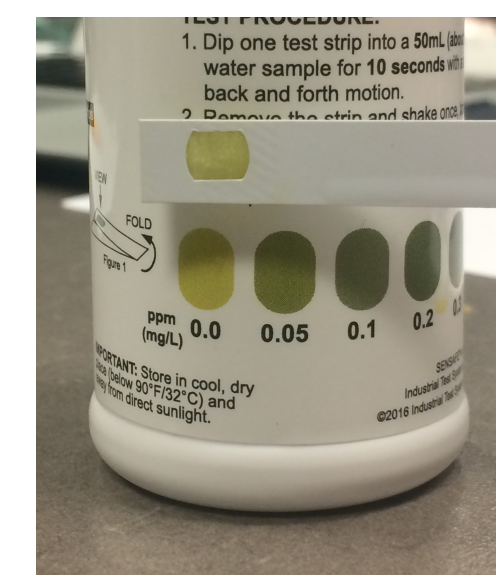


Semester 2

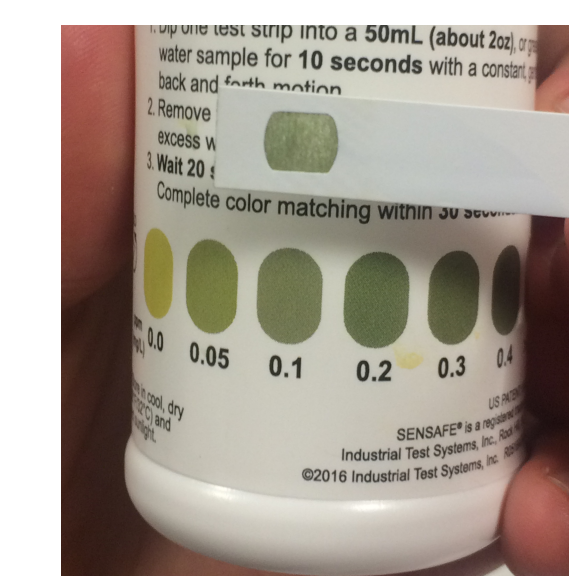


Organism	CT	Log Reduction
Virus	1.3	4
E. Coli	0.02 - 0.03	2
Streptococcus F.	0.01 - 0.03	2
Legionella	0.3 - 1.1	2
Total Coliform	0.19	6

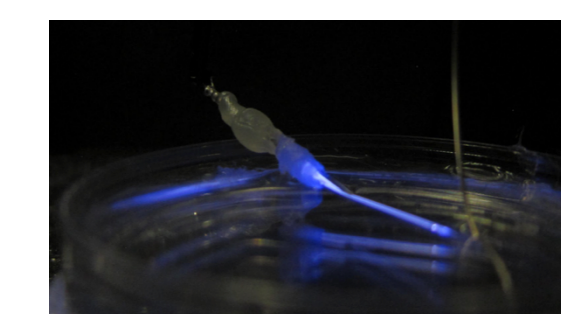
Concentration Times Needed to Kill Certain Organisms



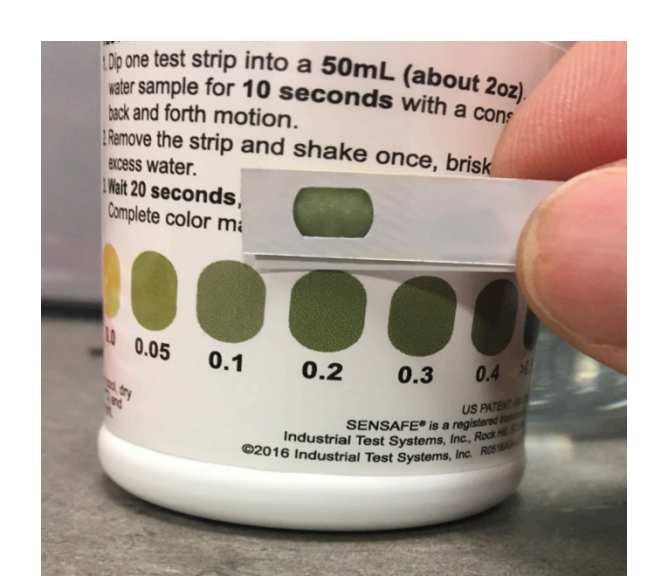
Failure



Getting closer...



Failure: needed too much power



Success!

Cited Sources

- <http://www.who.int/mediacentre/factsheets/fs391/en/>
- https://cdn01.zipify.com/images/000/243/720/original/2822953_20171211T124940.jpeg
- <https://www.spartanwatertreatment.com/ozone-disinfection-CT.html>
- <https://www.aidforafrica.org/wp-content/uploads/2014/03/Glimmer-of-Hope-Child-fetching-water.jpg>