

# MAIN FEATURES

Scipio is an indicator for the SODIS-Method. This Method is cheap and easy to apply and is already used in developing countries. It is based on the germ killing effect of UV-light included in the sunlight. Put water into a customary PET bottle and place it in direct sunlight for at least 6 hours ... done.

The stick is capable of measuring

- inclination
- temperature
- UV intensity
- sunlight intensity
- environmental medium
- heavy metal (beta)

Communication is possible via

- display
- RF-Link
- touchpanels

**>> life saving, easy to use,  
low-cost, worldwide <<**



**Team Scipio**



**University of Bremen**



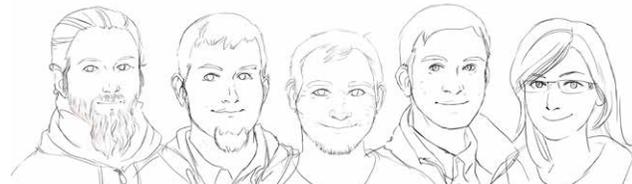
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# SCIPIO

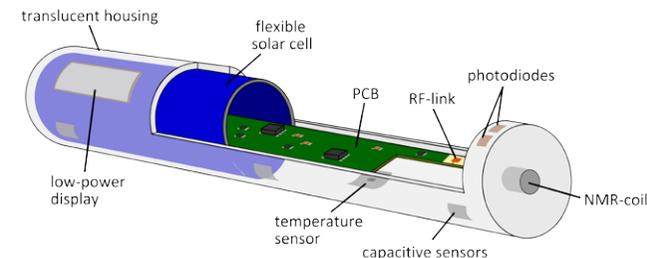
**SCIENTIFIC PURIFICATION INDICATOR**



*It is not work that kills, but worry*

- African Proverb

**>> WE SOLVE REAL PROBLEMS <<**



## THE TECHNOLOGY

To fulfill all requirements we put a lot of different techniques together. We developed a power management enabling us to use or store all of the provided power from the solar cell. We designed our own driverset for the Microcontroller to run our programmes at the lowest powerconsumption. The RF-link gives us the possibility to observe all measured data in real time and reconfigure the device. All functionalities are implemented on a fully custom designed printed circuit board. The prototype already has the dimensions of the later product. The heavy metal detector is based on observing spin-spin-relaxation of hydrogen protons. The relaxing protons induce a voltage of approximately 300 nV in the measurement coil. From the decay-timeconstant of this signal it is possible to calculate the concentration of heavy metals in the water.

**>>Impossible? Challenging!<<**

## THE PROBLEM

The SODIS Method works fine with an exposure duration of at least 6 hours in direct sunlight. But problems occur if the sky is cloudy or the bottle ist shadowed. The exposure duration increases dramatically due to these factors. After 6 hours the water is not drinkable and people will become seriously ill. The emanating danger of water contaminated with heavy metals is completely unconsidered.

## THE SOLUTION

Scipio will be submerged in PET bottles and measure the intensity and duration of exposure to UV-radiation as well as the temperature. Based on these measured key factors, optical signals about the progress of decontamination are given to the user. The complete device is a stand-alone system powered by a solar-cell. Special focus during the development is put on low power consumption, simple application, low cost and safety.



Viruses



Bacteria



Heavy Metal



Duration

