

## IP lab measurements on E. coli-sand-mixtures

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Aim of the MIRACHL project is the characterisation and monitoring of in-situ remediation of chlorinated hydrocarbon contamination using an interdisciplinary approach. Therefore, geophysical methods, as e.g. DCIP are used to investigate the remediation process.

To interpret these geophysical field IP data, lab investigations with different kinds of bacteria are necessary to assess the sensitivity of the methods for these specific applications. A first experiment was conducted with E. coli bacteria. After some preliminary investigation with only a suspension of live cells, the bacteria were merged together with a rich source of nutrients (Luria-Bertani broth - LB) and mixed in different flasks with a certain amount of sterilised Ottawa sand. These bacteria-sand-mixtures were continuously shaken under specific conditions (30°C, 80 RPM). At definite times (days) the mixtures were harvested and packed in a 4-point sample holder to measure SIP, TDIP and SP under laboratory conditions. The same procedure was repeated with only the media-sand-mixture to exclude any influences from just the nutrient.

The first measurements show a slightly increase in phase and a decrease in resistivity after a couple of days but also a dying of the bacteria after more than a week and therefore a decrease in phase again. The resistivity in general is very low (between 3-10  $\Omega\text{m}$ ) due to the high conductive LB-media (NaCl). So far, the self-potential measurements show no clear tendency and the TDIP data needs to be further processed.