

Electrochemical detection of redox inactive compounds or chemically stable, redox inactive metal cations in an aqueous medium (e.g. calcium and magnesium ions which are ubiquitous in any living system) is a great challenge for electrochemists. Currently available sensors are generally expensive, with a short lifetime and frequently with insufficient selectivity. For many chemical compounds it is also not possible to construct conventional sensor that works continuously.

Click; The light is on. Click; The light is off! Everyone knows how to switch on/off the lamp. In the same simple way, our sensor will work – only when we need or want. This makes our sensor eco-friendly, cost-effective and to some extent - “smart”.

Our project idea is based on a simple experimental platform which enables to control the sensor operation by electrochemical techniques, which means that by applying an adequate electrical potential we will be able to activate or deactivate the sensor. Functional molecular groups present in our sensors are able to detect chemically stable ions of the calcium and magnesium, which may result in analyzing samples that are inaccessible with conventional electrochemical methods.

The main advantage of the proposed systems is the simplicity of construction, controllability of the operation mode (“on” or “off”), low price and possibility for application to a variety of samples relevant for human health.