



## Successful results in multiplex battery sensor development project

The project "A multiplex plasmonic battery sensor for improved battery control", funded by the Swedish Energy Agency's Battery Fund Program, has been finalized with positive results. Insplorion's battery sensor and the underlying measurement technology NanoPlasmonic Sensing (NPS) have been improved within the project. Among other things, the sensor's long-term stability and reproducibility have been enhanced.

The development work has led to an improved integration of the sensor in coin cells, which has made it possible to obtain data with high statistics and reproducibility. The chemical stability of the sensor, and thus its service life, has been improved by coating the sensor with an ultra-thin, approximately 50 nm thick, layer of a chemically stable polymer. Commercial electrodes and electrolytes have been used to further increase the reproducibility of the data obtained. Within the framework of the project, the sensor signal has also been correlated with chemical processes, such as the loss of capacity and the state of charge of the cells. Measurements have mainly been performed on lithium ion whole and half cells with graphite anodes and lithium iron phosphate (LFP) cathodes.

In this project, the first steps have been taken to develop a multiplex sensor for simultaneous measurements of chemical / structural changes and temperature changes, inside battery cells, with a single fiber probe. Work on developing a multiplex sensor will now continue at Insplorion.

*"Now we have shown that we can measure the temperature inside the battery cell at the same time as chemical changes, which the market has demanded since we introduced our battery sensor. The greater accuracy achieved by measuring the temperature inside the cell further strengthens our sensor's contribution to optimizing the entire battery pack",* says Patrik Dahlqvist, CEO of Insplorion.

The project was financed by the Swedish Energy Agency's Battery Fund Program and was a collaboration between Insplorion AB and Chalmers University of Technology. CEVT AB has conducted a market research within the project. The project has been supported by a reference group consisting of representatives from AMTE Power Ltd (UK), CEVT AB (Sweden), Dukosi Ltd (UK) and SAFT Batteries (France).

Questions are answered by:

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Insplorion AB, with its disruptive sensor platform NanoPlasmonic Sensing (NPS), operates within four fields: air quality sensors, hydrogen sensors, battery sensors and research instruments. The sensors are small, durable and cost efficient at volume production. Our sensor technology enables air quality sensors at home, in cars and in public environment. Our hydrogen sensors show a sub-second response time, making them the fastest in the world and will promote the growth of hydrogen infrastructure. The battery sensor optimizes battery control and usage. Our instruments give scientists around the world nanometer sensitive real time data of surface processes in fields like catalysis, material- and life science. FNCA Sweden AB, +46(0)8-528 00 399 [info@fnca.se](mailto:info@fnca.se), is Insplorion's Certified Adviser at Nasdaq First North.

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