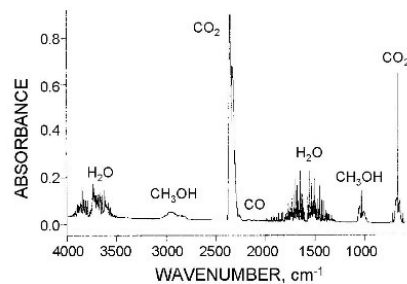
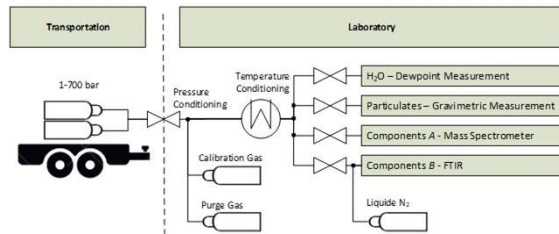


## Optimization of a Measurement Technique for H<sub>2</sub> Quality Determination



Source: Mobile device of NOW for taking H<sub>2</sub> samples

### Description:

Fuel cell electric vehicles (FCEVs) powered by green hydrogen offer high greenhouse gas reduction potential for “long distance” and “all purpose” vehicles like large passenger cars, busses and trucks. The Pt catalysator of the fuel cell (FC) takes up a major part of the total costs. By lowering the amount of Pt in the FC stack an improving of the operation conditions and further adhering of quality standards for the supplied hydrogen have to be fulfilled.

The goal of this work is the optimization of a sampling device for hydrogen refuelling stations and the evaluation of advanced analytical methods to detect all desired hydrogen quality parameters. The evaluated and developed suitable hydrogen analysis methods and optimized sampling methods will be performed with an Ion-Molecule Reaction Mass Spectrometer (IMR-MS) and an Fourier Transform Infrared Spectroscopy (FTIR). The analytical equipment will be set-up within the gas quality analysis laboratory at the independent research institution HyCentA.

### Content:

- Optimization of a **sampling device**
- Evaluate **analytic methods** to determine **hydrogen quality** and **detect impurities**
- **Development** of a sampling routine
- **Test** the developed methods for **quantified gas analysis**
- Creation of written master thesis

**Start:** from now

**Duration:** approx. 6 months

Thesis will be financially supported (€ 2.600), German / English

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