New gravimetric humidity measuring sensor

CSIC has developed a gravimetric sensor able to measure environmental humidity at different range of temperatures in an easy, accurate and precise way, due to the treatment undergone by the material used that allows elimination of the hysteresis phenomenon.

An offer for Patent Licensing and/or R+D collaboration

High accuracy due to hysteresis elimination

Monitoring and control of specific levels of relative humidity plays an important role in different scientific disciplines as physics, chemistry or medicine; in meteorology and agriculture and in diverse industrial fields as air conditioning, drying, storage, refrigeration, food proceeding or materials manufacturing.

The hygrometer presented is a gravimetric sensor based on a thin collagen film properly treated, able to correlate the increase or decrease of the sensor mass with the humidity.

Due to the treatment submitted, this sensor has the capacity to avoid the phenomenon of hysteresis in all range of humidity, in special close to 0 and 100% where current methods fail, improving the accuracy and precision of the sensor.
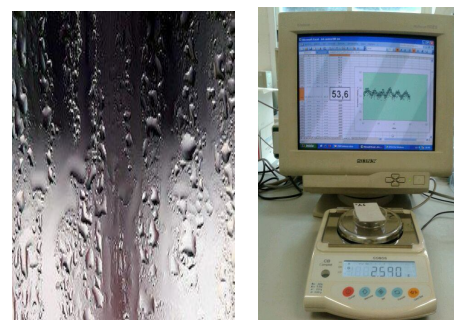

Image of the sensor showing the correlation between mass change and humidity after a process of calibration.

Main advantages and applications

- The collagen film properly treated is especially sensitive to variation of relative humidity.

- Calibration of the film allows direct measurement of the environmental humidity.

- Scale range: 0-100% rh.

- Accuracy higher than ±0.5% using the proposed method by elimination of phenomenon of hysteresis.

- This sensor can be used for continue measurement of humidity and also as a calibration system for other devices

- Cheap, easy to use and adaptable to any measurement device.

Patent Status

Priority patent application filed

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