Supplementary Information

Optical sensor for the sensitive determination of formaldehyde gas based on chromotropic acid and 4-aminoazobencene immobilized in a hydrophilic membrane

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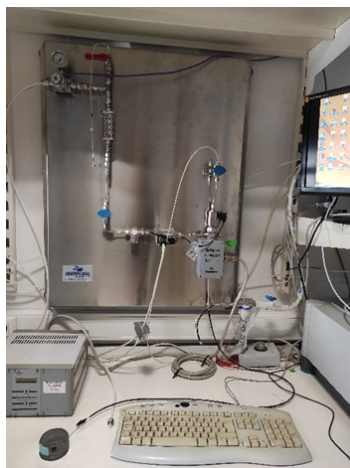
1. Image of measurement system.

Fig. 1S. Image of Controlled Evaporator Mixer system (CEM) and homemade climate chamber with the Color-NSPs inside.
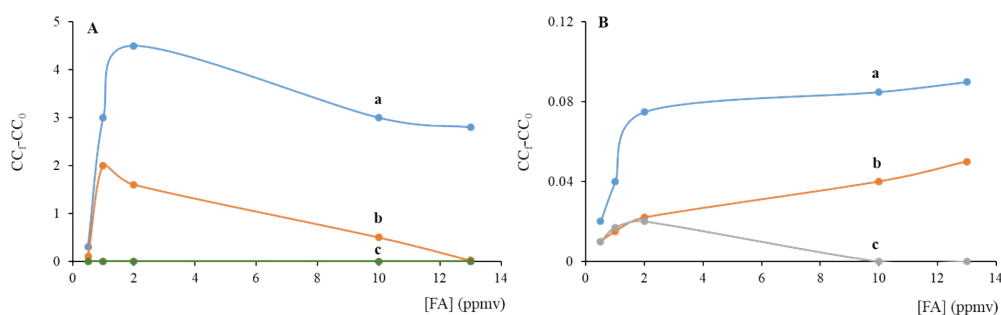
2. Selection of the Colour coordinate.

Figure 2S. Colour coordinates versus concentration of formaldehyde: A) colour space RGB: a $R-R_0$; b $G-G_0$; c $B-B_0$; B) colour space HSV: a $H-H_0$; b $S-S_0$; c $V-V_0$.

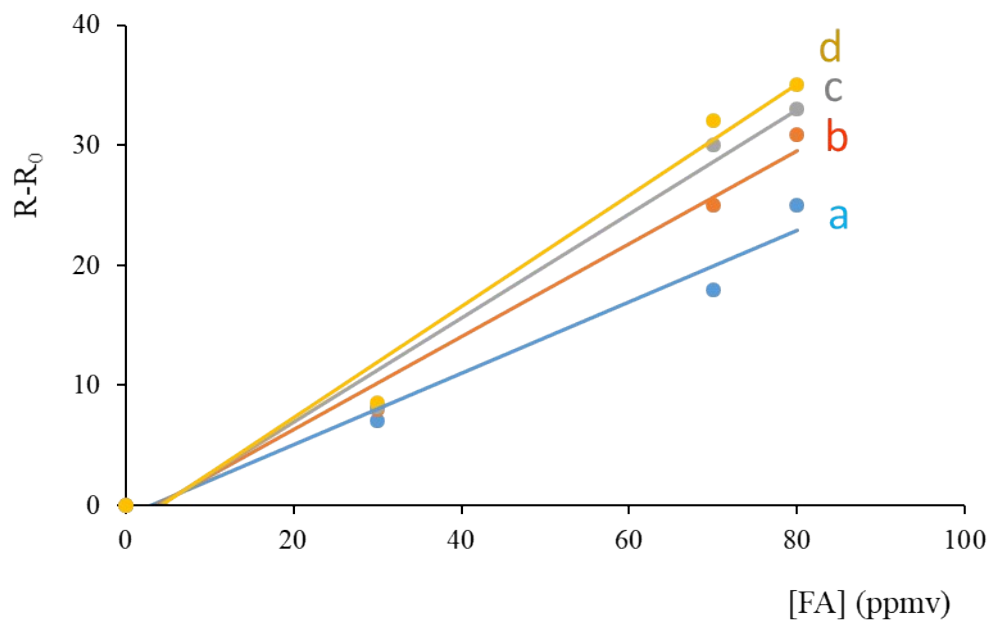## 3. *Optimization of contact time between the sensor and formaldehyde atmosphere.*

Figure 3S. Contact time between the sensor and formaldehyde atmosphere; a) 5 min; b) 15 min.; c) 20 min; d) 30 min.
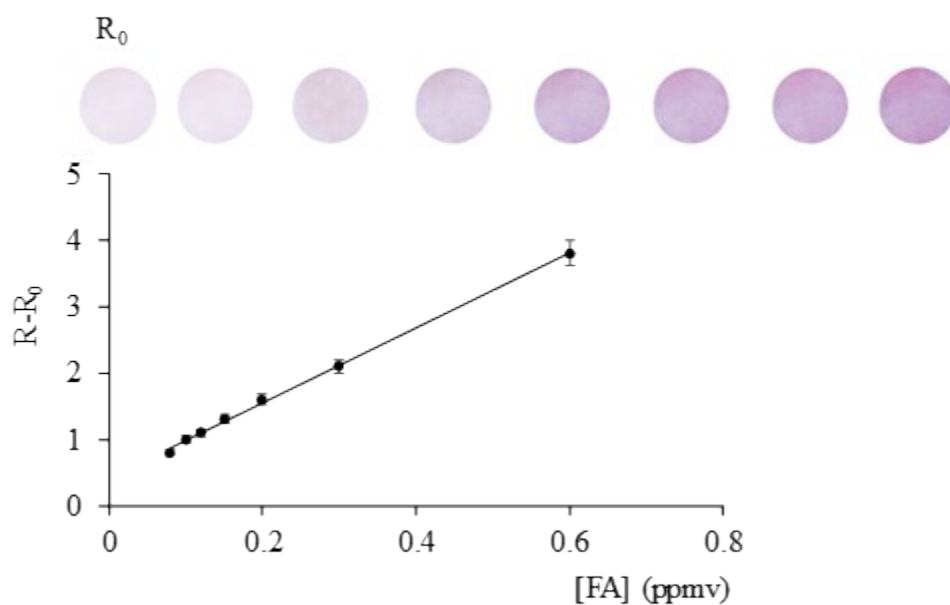
4. *Calibration plot*

Figure 4S. Calibration plot at 55% RH in 0.08-0.6 ppmv FA range.
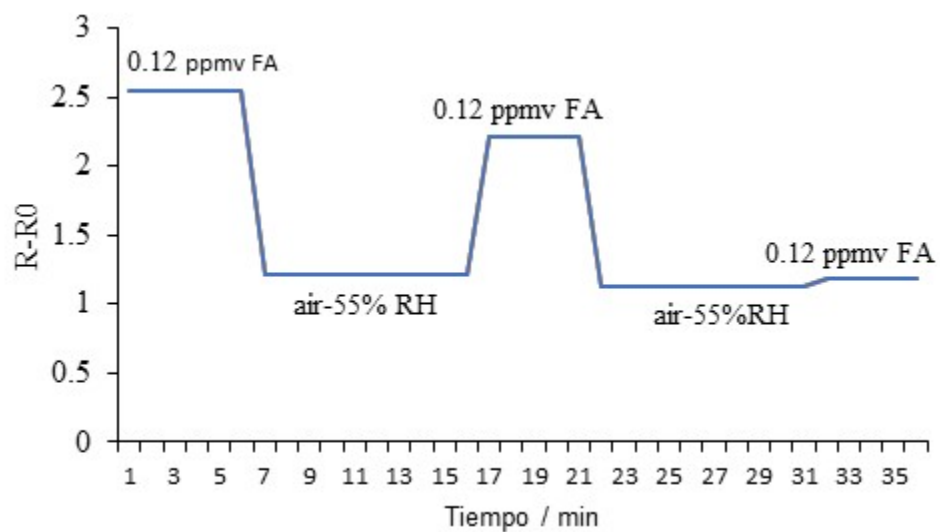
5. *Reversibility study*

Figure 5S. Sensor exposure cycles at 0.12 ppmv FA and air-55%RH alternately.

6. *The lifetime of sensing membranes*

Figure 6S. Sensor image as a function of time when exposed to a constant concentration of 0.12 ppmv FA