**Supporting Information S1**

**E-nose technical specifications**

A gas sensor array in which the chemical interactive material is non selective is intended to imitate the natural olfaction mechanisms, whose olfactive receptors are non selective. This is the reason why these devices are dubbed electronic noses [1].

The electronic nose used in this work is based on Quartz microbalances. These sensors are based on a piezoelectric crystals whose resonance frequency is directly proportional to the mass load graving on its surface. This relationship was ruled by Sauerbrey [2] as reported below:



where A is the coated area, ρq the quartz density, μq is the shear stiffness, f0 is the fundamental frequency.

The chemical interactive material used to cover the six QMB crystals are six different metalloporphyrins. Each metallo-porphyrin is characterized by six different metals (reported in the text) coordinated at the center of the pyrrole [3].

The features extracted by the sensors responses consists of the frequency shifts registered between two values: the reference value obtained by a nitrogen flow and the measure value given by the equilibrium between adsorbed and desorbed volatile molecules.

The six-dmensional data sets are analyzed by multivariate data analysis techinques, such as Principal Component Analysis (PCA) and Partial Least Square Discriminant Analysis (PLS-DA) [4].

References

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