

Chemical sensor array modeling. Quartz crystal microbalance sensors.

abbas abdelaziz

Abstract: The primary objective of the paper is to develop Gibbs- Duhem like equations for the interactions between Quartz Crystal Microbalance (QCM) based sensor array and a mixture of vapors. These differential equations connect the variations of the sensors partial sensitivities or the sensors response with the gas mixture components concentrations. Furthermore, Thermodynamic models in the case of conducting polymer sensors, whose multi-component adsorption follows the generalized adsorption model of Langmuir have been deduced, these are differential equations that connect the adsorption entropies to the selectivities of the sensors and coefficients of standardization at constant temperature

Keywords : chemical sensor array, Quartz Crystal Microbalance sensors, gas mixture, modeling, equations of Gibbs-Duhem, adsorption entropy