

Quartz crystal microbalance (QCM) technique has been used to detect a number of aromatic volatile organic compounds (VOCs) vapors widely used in research and industrial fields. Detection was based on dip coated polyaniline emeraldine salts (PANI-ES) thin films doped with three different acids, i.e. hydrochloric acid (HCl), dodecylbenzene sulfonic acid (DBSA) and 1,5-naphthalene disulfonic acids (1,5-NDSA) on AT-cut 10 MHz QCM electrode. Frequency change was recorded upon adsorption and desorption of (VOCs) on PANI films. It was found that frequency shifts varied linearly with both vapor concentration in part per million (ppm) and film thickness in nanometer (nm). Frequency changes are assumed to be mainly due to electrostatic interactions established between vapor molecules and dopant agents within PANI-ES films. Particularly, PANI-DBSA films were found to be highly sensitive (~ 7 Hz/ppm), selective to para-xylene (over toluene and benzene) and have a limit of detection of 3 ppm. Interestingly, the films exhibit excellent recovery within less than 3 min