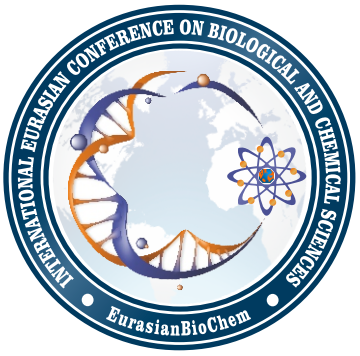

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ABSTRACT BOOK

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➢ **ORAL PRESENTATION**

Benzene, toluene, and xylene (BTX) detection using quartz crystal microbalance (QCM) sensor deposited by calixarene derivative having methyl ester moieties

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Abstract

The industrialization has brought many products and services. Although these developments are thought to provide many advantages that facilitate life such as technology, it is seen that chemical production and consumption have increased gradually. Volatile Organic Compounds (VOCs) are very important in that they can negatively affect human and environmental health, even at low concentrations among organic pollutants. Many production processes such as oil, varnish, paint, rubber and solvent production can be the source of VOCs. Among VOCs, benzene, toluene, and xylene (BTX) are very toxic chemicals that are widely used in industrial environments. For this reason, since exposure to BTX directly or indirectly causes serious health problems, they need to be monitored and kept under control. Sensors are the device which has properties of sensing to use for controlling and sensing of analytes. In sensor applications, there are several methods which are electrochemical, calorimetric, optical and acoustic systems for determination and sensing analyte via chemical interaction. Among these methods, Quartz Crystal Microbalance (QCM) technique is defined as response according to mass change on quartz crystal. QCM compose of a piezoelectric quartz crystal that has a sensitive and selective coating that serves as an adsorptive surface. Macromolecules and polymers can be widely used as a sensor for sensing of VOCs. Among macromolecules, calixarenes, well-known macrocyclic molecules that have almost unlimited derivatization potential and a unique three-dimensional structure. Calixarenes can be useful materials for sensor applications due to their sensitivity and selectivity possibilities towards many VOCs. In our previous works, we have also synthesized some calixarene compounds and they have been investigated their sensing properties for VOCs. In this study, I have prepared a calix[4]arene derivative having methyl ester moieties and coated onto QCM surface to investigate its sensing ability towards some benzene, toluene and xylene vapors.

Keywords: Benzene, calixarene, QCM, sensor, toluene, xylene.