ABSTRACT

Air pollution is most important from the public health point of view, because every individual person breathes approximately 22000 times a day, inhaling about 15 to 22 Kg of air daily. Polluted air causes physical effect decides undesirable aesthetic and physiological effects. Air pollution can be defined as addition to our atmosphereof any material, which will have a deterious effect on life upon our planet. The main pollutants contribute by automobiles are carbon monoxide (CO), unburned hydrocarbon (UBHC), oxides of Carbon (CO) and Lead. Automobiles are not the only source of air pollution, other sources such as electric power generating stations, industrial and domestic fuel consumption, refuse burning, industrial processing etc. also contribute heavily to contamination of our environment so it is imperative that serious attempts should be made to conserve earth's environment from degradation.

The work presented in this paper aims at detecting and understanding some critical behaviour aspects of zeolite containing emission catalysts. An already available mathematical model for precious metal catalysts was used as a starting point. A specially designed set of experiments provided the information needed to improve some special modelling features. New sub-models were introduced to account for hydrocarbon and H2O adsorption, as well as diffusion limitations in the zeolite. The effect of flow maldistributions during real world operation is investigated experimentally and numerically. Although a number of issues (especially regarding the de-CO mechanisms) are not fully resolved, significant progress was achieved as regards the understanding and prediction of zeolite catalyst operation.