

Engine and Auxiliary Systems

Edited by
Prof. Dr. A.K.M. Mohiuddin



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Automotive catalytic converters: Current status and some future perspectives

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Abstract

Automotive catalytic converters in the last three decades have shown considerable and developments in the development of catalysts. The aim of this chapter is to illustrate technology for abatement of exhaust emissions by analysing the current understanding catalytic converters and also understanding some of the materials that can be used as catal materials replacing the conventional materials, the specific role of the various components of catalytic converters, the achievements and the limitations. The challenges in the development novel automotive catalysts, which can meet future highly demanding and stringent pollution abatement requirements, are also discussed.

Introduction

Air pollution generated from mobile sources is a problem of general interest. In the last years the world vehicle fleet has increased from about 40 million vehicles to over 700 million this figure has increased to 1.02 billion in the year 2011 (autobeatinsider, 2011). environmental concern originated by mobile sources is due to the fact that the majority engines employ combustion of fuels derived from crude oil as a source of energy. Burning hydrocarbon (HC) ideally leads to the formation of water and carbon dioxide; however, due non-perfect combustion control and the high temperatures reached in the combustion chamber the exhaust contains significant amounts of pollutants which need to be transformed in harmless compounds. In this chapter, the control strategies and achievements in automotive pollution control will be discussed. Attention is focused on recent developments in the field the three-way of catalysts. This research is to focus essentially on the catalytic aspects pollution abatement, even though the reader should consider that technological solutions such electrically heated catalysts, etc., may heavily affect the converter performance [J.C.Guibet,1999].