

Design and Development of Automotive Catalytic Converter Using Non-Nobel Catalyst for the Reduction of Exhaust Emission: A Review [†]

Kuldip Patel ^{1,*}, Dattatraya Subedar ², Femina Patel ³

¹ C. S. Patel Institute of Technology, CHARUSAT, Changa, Gujarat, India; kuldeepdpatel@gmail.com (K.P.);

² Associate Professor, Mechanical Engineering Department, C. S. Patel Institute of Technology, CHARUSAT, Changa, Gujarat, India; dattatraya.me@charusat.ac.in (D.S.);

³ Professor, Chemical Engineering Department, Vishwakarma Government Engineering College, Ahmedabad, Gujarat, India; drfeminapatel@gmail.com (F.P.)

* Correspondence: kuldeepdpatel@gmail.com (K.P.);

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Abstract: A principal part of the air pollution is caused because of vehicular emission discharge, which nowadays expands at an alarming rate. The exponential use of vehicles and another industrial fossil fuel-based equipment increases emissions such as CO, HC, and NO_x as by-products of the combustion process. Pollutants that are escaped into the atmosphere from the exhaust have harmful effects on several living organisms and the atmosphere. Numerous elective innovations have been introduced in automotive systems to cleanse the discharges from the engine and different subsystems. Increasing the costs of noble metals as a catalyst in automobile vehicles motivates the investigation of materials that can be substituted for noble metals. This paper reviews the research work on inexpensive alternative catalysts such as Perovskite, spinel, monel, and hopcalite, which satisfy environmental needs. It includes coating methods and design optimization of the catalytic converter at various operating temperature range to achieve a higher conversion rate for exhaust purification.

Keywords: automotive catalytic converter; non-noble catalyst; petrol engine; exhaust emission.

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Conflicts of Interest

The authors declare no conflict of interest.