

**HIGHER TECHNICAL INSTITUTE
MECHANICAL ENGINEERING COURSE**

DIPLOMA PROJECT

**SYNTHESIS OF CATALYST POWDERS
FOR CATALYTIC CONVERTERS**

by
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Synthesis of catalyst powders for catalytic converters

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FOR CATALYTIC CONVERTERS**

by

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Project Report

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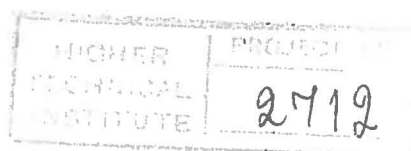
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' Synthesis of Catalyst Powders for Catalytic Converters'

Summary

The main objectives of the work are, to investigate the literature on various techniques and materials for using in the production of catalyst powders for catalytic converters.

To identify the limiting parameters on the improvement of catalytic properties and to investigate the selection of materials, their respective properties and cost. Finally to design and manufacture the body of the catalytic converter, with the powder synthesis method.

Before the development of the above purposes of the work, a general introduction of the problem to be tackled, possibly including historical approaches to a solution and indicating the chosen approach must be investigated.

Also, the heat engine, the fuels, the mixture formation the combustion process, the lambda factor and engine design measures must be studied.

The work will be cover the theory for the pollution into the environment, the properties of exhaust gas constituents the exhaust gas aftertreatment and the lambda control system.

After these, the catalyst technology some catalyst systems, the BMW three way catalytic converter and Novel catalyst powders for fluid bed catalytic converters will be investigated.

However for the production of a new ceramic body in catalytic converters and the production of a new ceramic body in catalytic converters (monolith), the advanced processing of Oxide Ceramics by Spray Drying should be studied.

Finally I will referred to Exhaust Gas testing in spark ignition engines and the exhaust gas analyzers.

Introduction:

Automotive vehicles have been increased to a great number at the last years. Of course all the vehicles take their kinetic energy from the internal combustion engines. The internal combustion engine have been proved that is the most efficiently source of mechanical energy, So the purpose of the internal combustion engine is to convert the heat energy into mechanical energy. The heat energy is created from the combustion of some fuels. The two main categories of fuels which are used today are the diesel and petrol. Usually the petrol which is used in cars is deviled into three of four categories . The difference of the categories is the number of octants and the lead. Several cars today can burn unleaded fuel. These cars are usually catalytic.

But unfortunately the millions of cars which are circulated in the world, provoke dirtying in the environment. Especially the engines which take the chemical energy from the petrol, cause bigger dirtying to the atmosphere. Some of the exhaust gases cause the death to people or illnesses or changes to the weather.

The level of emissions is influenced by many factors.

The most important are:

- the weight
- the cross - sectional area
- the shape of the vehicle
- the tractive resistance's
- the required driving performance
- the mixture formation unit
- the combustion process
- the ignition system