**LOW TEMPERATURE OPERATING CATALYTIC CONVERTERS FOR**

**CARBON MONOXIDE OXIDATION**

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**ABSTRACT**

A Typical catalytic converter used today works quiet efficiently at extortionate temperatures. But when the engine is cold or at normal temperatures and also after the cold start, the catalytic converter does nothing to control pollution. This is one of the prodigious problems of current catalytic converters despite considering them as the major scope for emission reduction. Also, to enhance the fuel efficiency, the advanced IC engines are being designed to minimize the amount of heat wasted in the exhaust. Hence, the future generation of catalysts must work at temperatures that are 100℃ lower than the current exhaust treatment catalysts. Thus, the paper focuses on a solution to achieve the low temperature activity of Carbon monoxide oxidation in catalytic converters even at harsh conditions encountered at high engine loads. A automatically dispersed ionic platinum (Pt2+ ) on Ceria (CeO2 ) which is already thermally stable is used as catalyst in most converters. The oxygen in the catalyst can be activated by steam treatment at 750℃ to achieve the goals of low-temperature carbon monoxide oxidation while providing outstanding hypothermal stability. A new type of active site is created on CeO2 in the vicinity of Pt2+ which provides improved reactivity. These active sites are stable up to 800℃ in oxidizing environments. More importantly, this enhanced CO oxidation is also found to occur on other commercially available ceria. High temperature steam treatment not only enhances CO oxidation under stimulated vehicle exhaust conditions but also improves oxidation of other components of exhaust such as saturated and unsaturated hydrocarbons and NOx. This demonstration of hypothermal stability at either extreme temperatures along with high reactivity will make the catalytic converter even more eco-friendly and suppresses most of its demerits.

**KEYWORDS**

Cold start problems, lower temperature catalyst, steam treatment, hypothermal stability, high reactivity, CO oxidation.