Catalytic converters are central to emission control systems in modern automobiles. The catalytic activity of present converters, i.e. its ability to react with exhaust emissions, is very low at vehicle start-up because the catalyst must be heated to its light-off temperature, a process that takes up to two minutes. To remedy this problem, close-coupled catalysts have been employed to warm up faster but this in turn poses problems concerning thermal stability and resistance to poisoning. This technology is an auxiliary catalytic converter comprised of nanostructured composite filaments that reach the light-off temperature almost instantaneously and thereby reduces emission during engine start-up. The use of nanomaterial also ensures efficient use of precious catalytic metals and cuts down on overall converter cost.

Cost-Effective Catalytic Converter with Optimized Emissions Control and System Stability

This technology is an auxiliary catalytic converter designed to replace the functionality of the close-coupled catalyst by operating on a different principal. The main feature is a catalytic material composed of micron-sized, nanostructured wire networks that can be heated instantly, thus eliminating the need for close proximity to the exhaust manifold. This provides immediate catalytic activity as well as the ability to use a wider variety of catalytic materials beyond those necessary to withstand the high temperatures experienced by the close-coupled catalyst. Furthermore, the use of advanced nanomaterials reduces the total amount of catalyst material required for desired emission abatement. Beyond augmenting a standard catalytic conversion system, optimizing emissions control and system stability, this technology can function as a standalone unit in niche catalytic systems.

Lead Inventor:

Joze Bevk, Ph.D.

Applications:

- Automobile Catalytic Converters
- Fabricated metal filaments and network can be used in hydrogen fuel cells
- Electrode for electrochemical cells
Catalytic Converter for reducing pollutants in flue gas
Ozone converter

**Advantages:**

- Instant light-off time i.e. reduced emission at vehicle start-up
- Lower converter production cost due to efficient use of precious metal
- Able to use a wider range of catalytic materials
- Reduces emission during other problematic operating conditions such as idling, switching from electric to gas in hybrid cars, lean-burn, etc.

**Patent information:**


Tech Ventures Reference: IR CU12014

**Inventors**

Joze Bevk