



Portable Nano-Particle Emission Measurement System

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Publishable Executive Summary

Typical particulate formation models for internal combustion engines have focused on describing carbonaceous (soot) particles as they were the dominant particulate emission type in terms of mass and number. Novel exhaust after treatment (diesel particulate filters) and engine (gasoline direct injection) technologies have caused other, liquid-like, particulates to become increasingly important when considering particulate number emissions. Thus, present particle formation models are not well suited to modeling particulate emissions from modern vehicles.

To address this concern, a novel particulate formation model that includes a description of liquid-like particles has been formulated. Additionally, a novel numerical method that can solve the new model has been developed as well. The model and method can fully describe all important characteristics of modern vehicle particulate emissions while considering minimization of computational costs. It is recommended the novel model and method be implemented in a simulation platform capable of modeling particulate emissions from the cylinder through to the tailpipe.

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Project partners:

| # | Type | Partner | Partner Full Name |
|---|---------|---------|---|
| 1 | IND | HORIBA | Horiba Europe GmbH |
| 2 | IND | Bosch | Robert Bosch GmbH |
| 3 | IND/SME | CMCL | Computational Modelling Cambridge Limited |
| 4 | IND | TSI | TSI GmbH |
| 5 | HE | UCAM | The Chancellor, Masters and scholars of the University of Cambridge |
| 6 | HE | ULL | Université des Sciences et Technologies De Lille – Lille I |
| 7 | IND | IDIADA | Idiada Automotive Technologie SA |
| 8 | IND | HORJY | Horiba Jobin Yvon S.A.S. |
| 9 | IND/SME | UNR | Uniresearch BV |



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