



Portable Nano-Particle Emission Measurement System

EUROPEAN COMMISSION
 Horizon 2020 | GV-02-2016 | Technologies for low emission light duty
 powertrains
 GA # 724145

Deliverable No.	PEMs4Nano D2.06	
Deliverable Title	Validated advanced nanoparticle model	
Deliverable Date	2018-03-31	
Deliverable Type	REPORT	
Dissemination level	Confidential – member only (CO)	
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Status	Final	2017-03-25



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 and implemented into the SRM Engine Suite software. The coupled software is validated against engine data over a range of speeds and engine loads for particle phase emissions. Given the agreement between the particulate phase emission measurements and simulations with the novel particulate formation model, the novel model has been validated. Finally, the advanced functionality of the particulate model is utilized to investigate the effect of the sampling system conditions on predicted particle size distributions and composition. The tasks described above are a sub-set of D3.2 - "SRM Engine Suite validation for ICE configurations", thus readers are referred to that document for the details.

Acknowledgement

The author(s) would like to thank the partners in the project for their valuable comments on previous drafts and for performing the review.

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



This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement no. 724145.