Some facts about **AEROSOLS**:

Funded by

the European Union

- Its methodology **integrates expertise from different scientific fields** such as chemistry, environmental science, physics, materials science, engineering, digitalisation, and biology.
- It combines various R&D approaches, from basic principles observed (**TRL 1**) to technology validated in a relevant environment (**TRL 5**).
- It helps with achieving the principles of **Equality/Equity, Diversity, and Inclusion (EDI)**, e.g., gender dimension and study of social impacts.

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Air Quality and Health Impact of Primary Semi-volatile and Secondary Particles and Their Abatement

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JK Research

and Innovation



Fine particle emissions from transport and the formation of secondary aerosols significantly impact the environment and public health, yet the underlying mechanisms remain incompletely understood.

The **AEROSOLS** project aims to define robust and transparent measurement and modelling methodologies to quantify the currently disregarded volatile/semi-volatile primary and secondary emissions, assess their associated risks/impacts, and propose technological and legislative monitoring/abating mechanisms to help improve air quality and public health.



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Background

The complex organic fraction of particle emissions from transport can derive from thousands of hydrocarbons (HCs) in fuels and engine lubricating oils. The presence of some heavier HCs called intermediate-/semi-volatile organic compounds (I/SVOC) can result in uncertainty in physico-chemical characterisation of particle emissions when using conventional methodologies. Examples of associated challenges are:



Therefore, it is needed to develop robust methods to characterise these compounds, their behaviour, climate, air quality, and health impacts, and how to abate them.



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AEROSOLS Objectives

1. Primary emissions characterisation

Physico-chemical characterisation of primary volatile/semi-volatile emissions formation, abatement, and dynamics under vehicle real-driving-emissions (RDE) testing conditions on the road and in labs

2. Secondary emissions characterisation

Physico-chemical characterisation of secondary aerosol formation and atmospheric evolution mechanisms to provide scientific evidence of the role of primary emissions in their formation

3. Impacts and taxonomisation

Taxonomisation and prioritisation (assisted by Artificial Intelligence) of primary and secondary emissions according to their health, social, air quality, and climate impacts

4. Methods for improved quantification

Development of robust measurement, analysis, and modelling methods for improved quantification of transport 'total' externalities (emissions), including disregarded volatile/semi-volatile and emergent emissions

5. Advocacy and future abatement policies

Proposal of technological and legislative monitoring/abating mechanisms to support future legislations/policies on emissions, "polluter pays", and preventing smog episodes

AEROSOLS disseminates the advocacy information to the stake-holders and policymakers to assist the transition to a cleaner and climate-neutral society/economy.





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