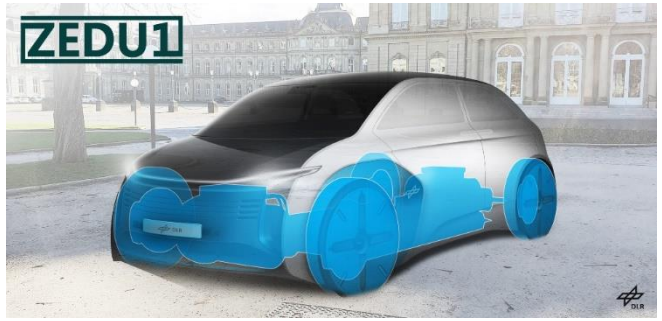
Towards the reduction of brake and tire emissions: The Zero Emission Drive Unit (ZEDU-1)



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How can tire and brake emissions be avoided?

Available methods:

- Brake coating
- Recuperation
- Tire design & Materials

New approach

Zero Emission Drive Unit

- Wet multi-disc brake & tire wear adsorption
- Hybrid-inductive brake

DLR HWA ENGINEERING SPEED Baden-Württemberg MINISTERIUM FÜR WIRTSCHAFT, ARBEIT UND TOURISMUS

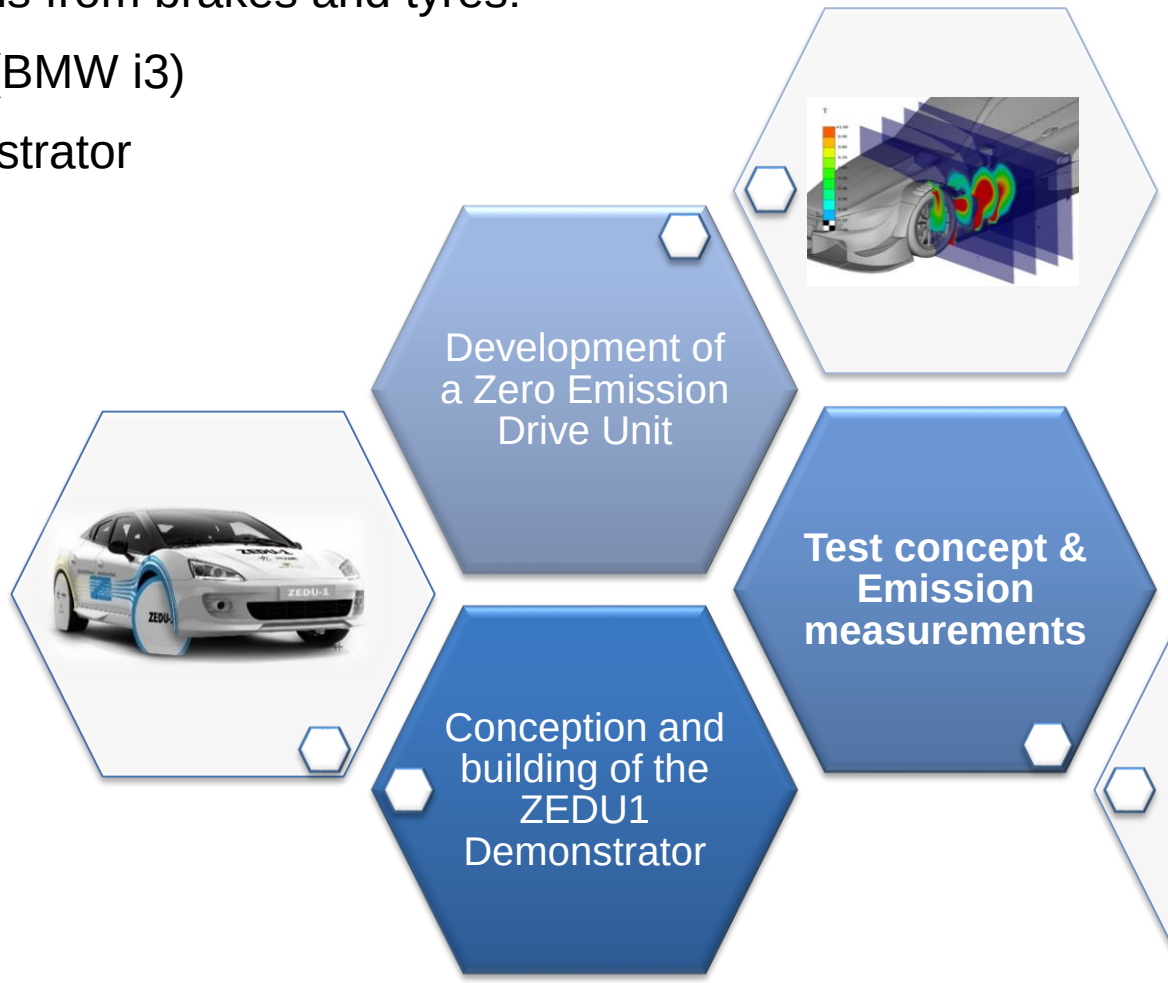
Project Overview: The Zero Emission Drive Unit (ZEDU-1)

Dynamometer tests and on-road measurements of particle emissions from brakes and tyres:

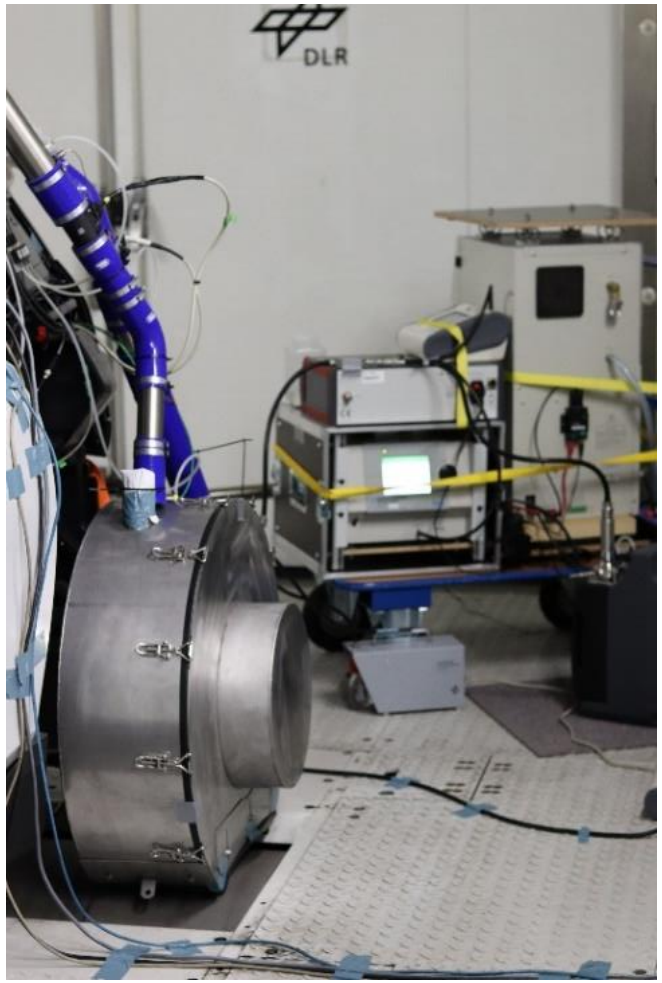
- Reference car (BMW i3)
- ZEDU1 Demonstrator

Characterization of released ultra-fine particles

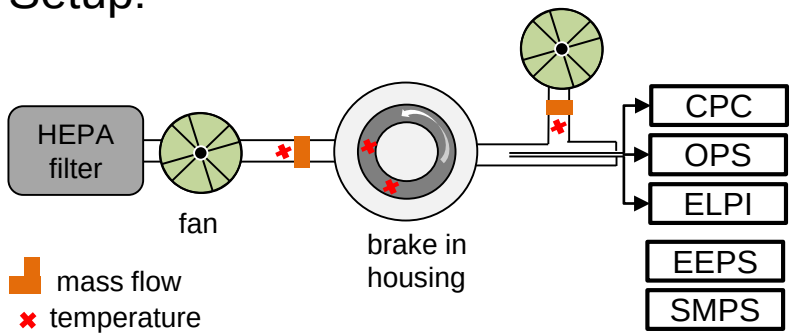
- Number, size distribution, mass
- Morphology, Chemistry



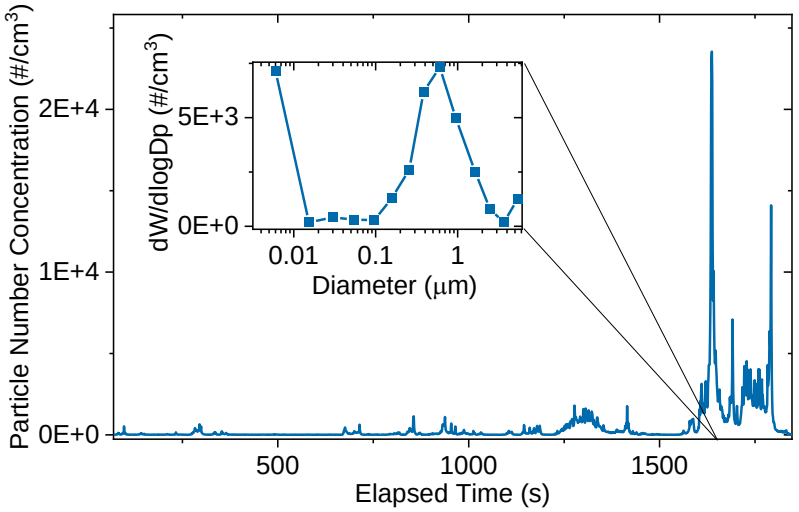
BMW i3: Brake emissions on the chassis dynamometer



Setup:



Emissions during WLTC:



Results & Conclusions:

- Successful development of a reference test setup (tire and brake)
- First results: Well-defined accumulation mode and sub-10-nm particles under normal use conditions (brake)

Outlook:

- On-road reference measurements (tire and brake)
- Completion and emission characterization of ZEDU1 Demonstrator and hybrid-inductive brake modul

Stay tuned!

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