Particulate emissions from aromatic containing fuels

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Introduction
Reduced Sulphur limits in SECA region [1]. Interest to study the effect of aromatics.
Previous experiments showed a decrease in PM emission (mass and number) when adding aromatics (contrary to expectations) [2]. Why?
Hypothesis: More premixing => less PM formation

Objectives
- To explain findings from previous results (multi-cylinder) [3]
  - Using single cylinder research engine (Euro IV calibration) and pressure trace analysis
  - Using ignition improver to further isolate the effect of aromatics in the fuel
- To increase understanding of PM emissions (= formation – oxidation)
- Variation in pre-mixing by varying rail pressure and EGR

Conclusions
- The use of ignition improver reduces PM emissions using aromatic fuel blends.
- The reason is improved pre-mixing, here enabled by high injection pressures
- Plausible reasons include lower equivalence ratio “per molecule”, higher density & lower viscosity. To be explored in future studies.

References