Particulate Matter Characteristics for Highly Dilute Stoichiometric GDI Engine Operation

John M. E. Storey, Teresa L. Barone, Samuel A. Lewis, Brian Kaul
Oak Ridge National Laboratory

2012 DEER Meeting
Dearborn, MI

June 6, 2011

Acknowledgement: DOE Office of Vehicle Technologies
• We have been characterizing engine particles since 1990’s
  * Particle size, number, chemistry and morphology
  * Diesel, PFI, PCCI, HCCI, GDI, RCCI, HECC, GDI+EGR

• This has led to many tools, analysis methods, publications
  * Extraction and thermal desorption GC-MS for chemistry
  * Making particle morphology “quantitative”

• Focus of Poster: Dilute GDI PM
  * Higher efficiency for stoich GDI
  * EGR shown to reduce PM

![Graph showing particle size distribution and EGR impact]