



# GERG

## Young Researcher's Prize

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Nov 25, 2015



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## A New Pre-chamber Ignition Strategy for Highly Efficient Natural Gas Engines

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GERG

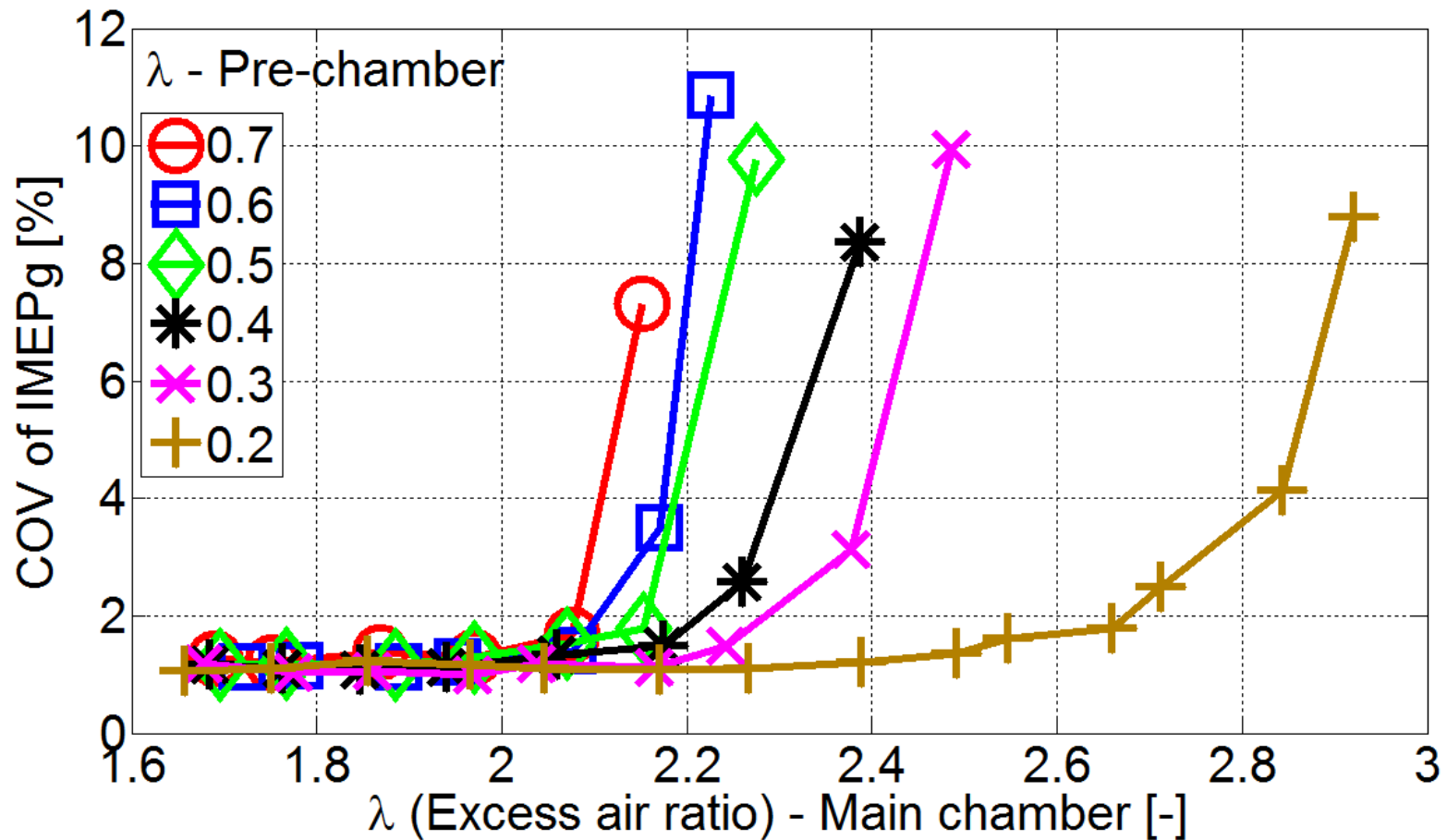
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# Problem statement

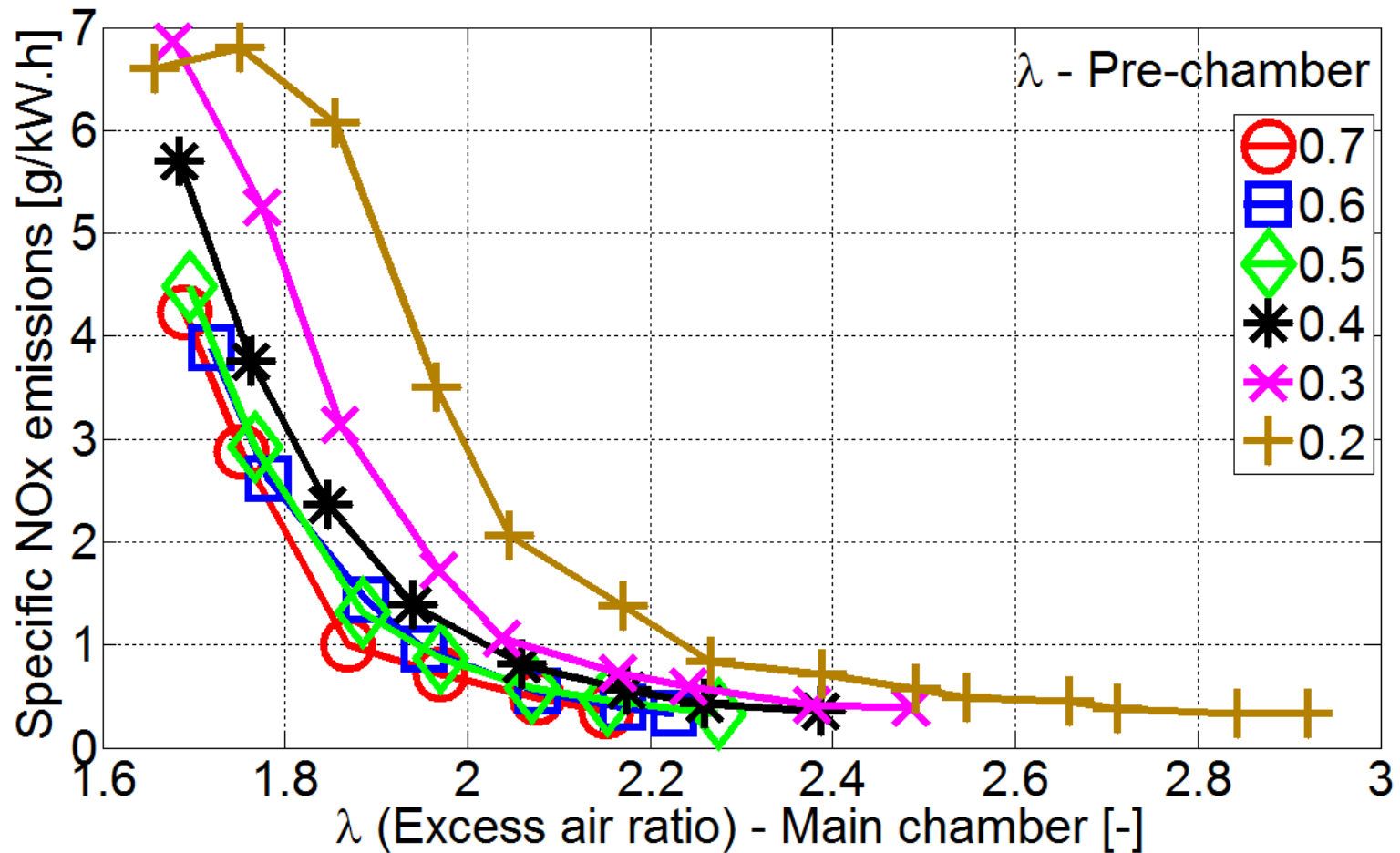
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- Natural Gas – An attractive alternative
- Spark Ignited Gas Engines for road transport
  - Stiochiometric with 3-way catalyst
  - Limited efficient (< 40%, at best) and power output
- Solution = Lean burn concepts
  - Better thermodynamic efficiency
  - In-cylinder NOx reduction
  - Extent limited by the spark ignition system
- Solution = Pre-chamber Ignition -> Fuel Rich PC

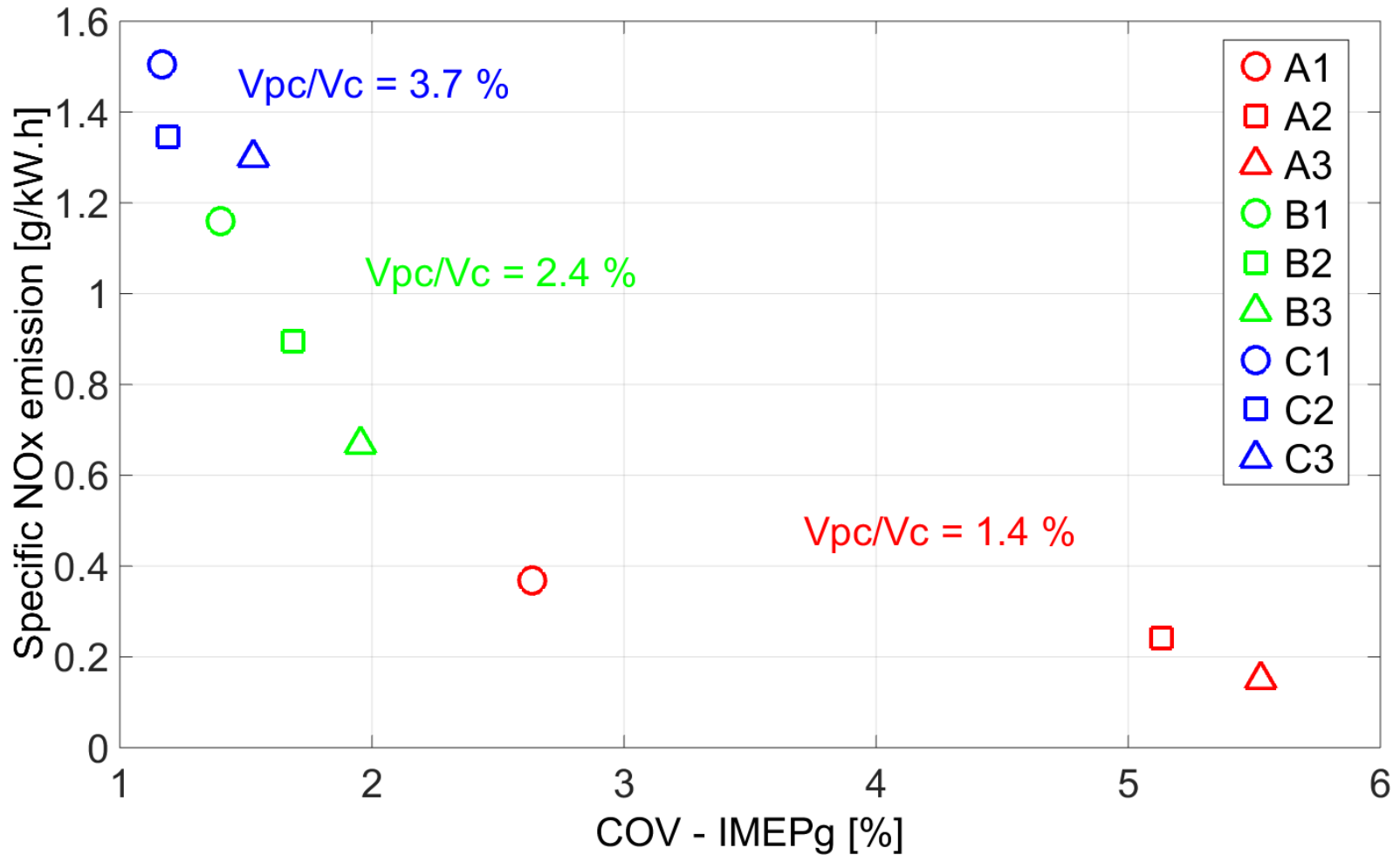
# Fuel Rich Pre-chamber



# Fuel Rich Pre-chamber



# Optimal pre-chamber volume



# Efficiency improvements

