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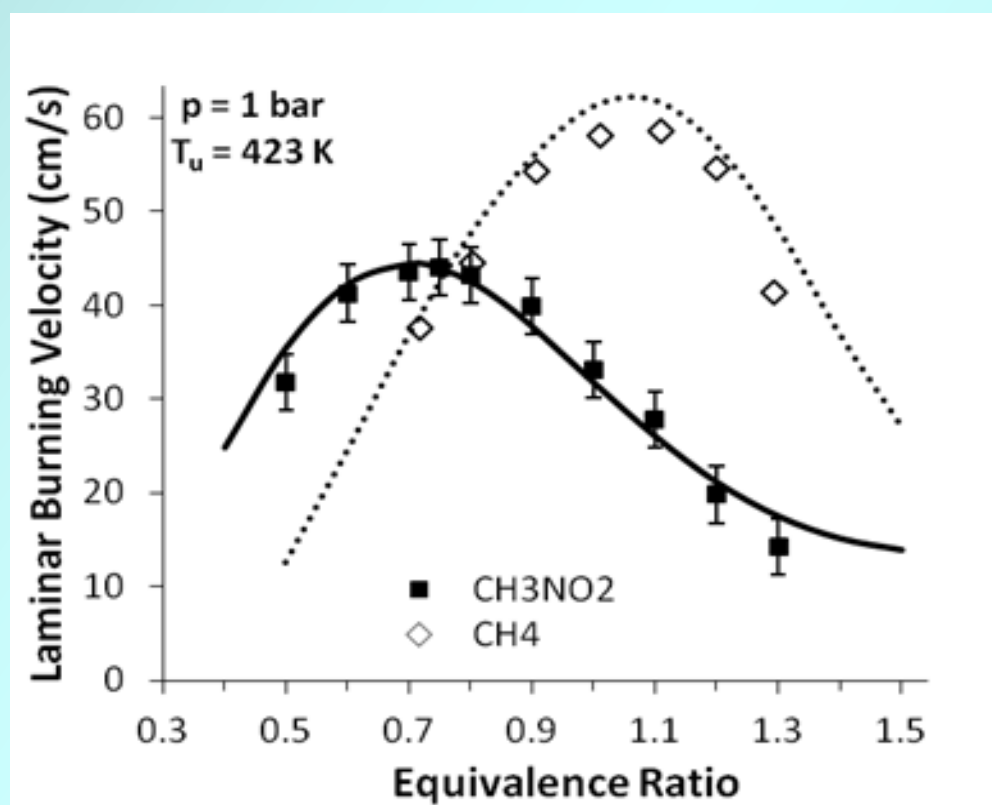
## Laminar burning velocities of premixed nitromethane/air flames: an experimental and kinetic modeling study

par

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Due to its high lubricity, nitromethane is a fuel regularly used in model engine or more generally in race engine. The objective of this study is to improve our knowledge and understanding of the combustion of nitromethane for better evaluating its potential as fuel for automotive spark-ignition engines. To achieve this goal, unstretched laminar burning velocities of nitromethane-air mixtures were measured using spherical propagation methodology at 423 K over a pressure range from 0.5 to 3 bar and equivalence ratios from 0.5 to 1.3. The data indicated a typical adverse effect of pressure on laminar burning velocities. Based on the work done by Zhang et al., Proc. Combust. Inst., 33 (2011) 407-414, a modified detailed kinetic model including 88 species and 701 reactions was proposed. Comparisons between experimental and simulated un-stretched laminar flame speed were made and showed good agreement. The new kinetic mechanism was also used to successfully simulate published experiments and rationalize the unusual occurrence of maximum flame speed in the fuel-lean region.