



**The Combustion Institute**

5001 Baum Boulevard, Suite 644  
Pittsburgh, Pennsylvania 15213-1851 USA  
Ph: (412) 687-1366  
Office@CombustionInstitute.org

Fax: (412) 687-0340  
CombustionInstitute.org

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**Gautam Kalghatgi**

*Candidate, 2016 CI Board of Directors*

**Reasons for Nomination**

The global demand for energy is increasing and combustion will continue to be the primary supplier of this energy in the next several decades. Hence R&D in combustion is vital in order to improve efficiency, ensure energy security and reduce local and global environmental impacts. The combustion community needs to convey this important message effectively to governments and funding agencies which seem to consider combustion research as irrelevant. The Combustion Institute (CI) could have a vital role to play in this task. The ability of CI to represent the combustion community effectively will be greatly



*Gautam Kalghatgi*

strengthened if it speaks for all combustion interests - industry as well as the academic research community. There has been a strengthening perception, particularly in industry, that CI has been moving away from practical/industrial concerns. I have been a part of an effort, as a member of the Industrial Relations Committee of CI, to address this perception of imbalance. As a member of the board I will continue these efforts to bring CI and industry together so that CI can effectively represent all the combustion community. I will also seek ways for CI to communicate the importance of combustion to the outside world.

*See next page(s) for candidate's curriculum vitae.*

### Gautam Kalghatgi

Prof. Kalghatgi is currently a Principal Professional at Saudi Aramco, working on new fuel/engine combustion systems and helping and guiding the expansion in R&D in fuels technology. Currently he is also a Visiting Professor at Imperial College, London as well as at Oxford University. He has held similar appointments in the past at KTH, Stockholm; Technical University, Eindhoven and Sheffield University. He is also on the Technical Advisory Committee for the Clean Combustion Research Center (CCRC) at KAUST (King Abdullah University of Science and Technology). He is a fellow of the Royal Academy of Engineering, SAE and I.Mech.E. and is on the editorial boards of several journals. He has a B.Tech. from I.I.T. Bombay (1972) and Ph.D. from Bristol University (1975) in Aeronautical Engineering. From 1975 to 1979, he did post-doctoral research in turbulent combustion at Southampton University. He has been active in industrial combustion and fuels research since 1979, for 31 years with Shell Research Ltd. in the U.K. and with Saudi Aramco since October 2010. All his work has been driven by and has directly contributed to practical applications. He has also made very significant contributions to combustion science and has around 130 publications including a recent book, "Fuel/Engine Interactions", to his name. Some highlights of his contributions are -

1. His papers on the shape, size and stability of diffusion flames are very highly cited and have contributed to understanding turbulent combustion. This work also provided the basis for the design of industrial and emergency flaring systems for Shell.
2. He was amongst the early adopters of optical diagnostics to study combustion in IC engines and in rocket engine exhausts. He has expanded our understanding of SI and HCCI engine combustion including spark ignition, flame development, cyclic variation, knock, autoignition and deposits. These studies contributed directly to the development and market launch of many premium grade branded gasolines (Formula Shell, Optimax, V-Power) by Shell. His work on fuel anti-knock quality has profoundly influenced the billion-dollar question about future gasoline quality and specifications. For instance Saudi Arabia has cancelled its decision to introduce a MON specification in 2017 and debates have started about the appropriateness of existing gasoline octane specifications both in Europe and the U.S.
3. His recent work on gasoline compression ignition (GCI) could be of great strategic significance for future IC engines and fuels as outlined by him in several recent review papers on transport energy. Saudi Aramco has recognized this and has invested heavily in developing GCI technology.