

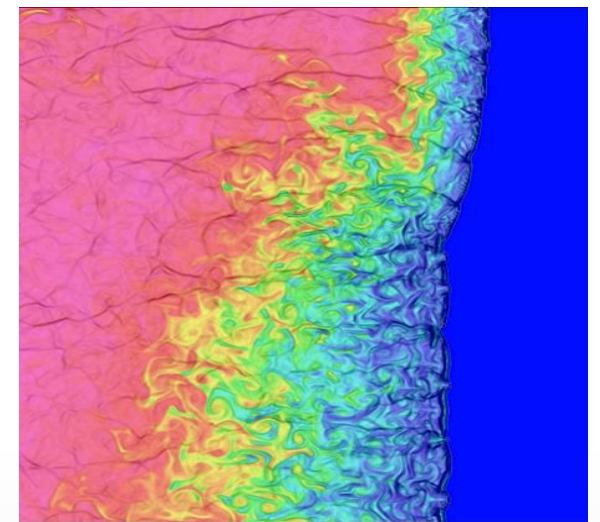
Detonation Structure in Mixtures with Non-monotonous Energy Release

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The structure of a detonation wave is strongly influenced by the shape of the energy release profile. Under certain conditions, a sub-structure or double detonation structure can be observed. The present seminar examines the relationship between the detonation structure and the energy release profile characteristics.



A number of mixtures, including H_2-NO_x , $DME-O_2(-N_2-CO_2)$, and n -heptane- O_2-CO_2 , which exhibits non-monotonous energy release profiles, have been studied using 1-D and 2-D numerical simulation as well as detailed chemical kinetics analyses. The origin of the non-monotonous energy release has been systematically explained and the nature of the detonation structure has been characterized.

Rémy Mével is an associate professor at the Center for Combustion Energy and Department of Automotive Engineering at Tsinghua university. He obtained his B.S. (2004), M.S. (2006), Ph.D. (2009), and HDR (2015) from the University of Orléans in France. He has been an adjunct professor at the University of Orléans in 2009-2010, and a postdoctoral scholar and a research scientist at the California Institute of Technology from 2010 to 2017. Professor Mével's research focuses on chemical kinetics, laser diagnostics, and spectroscopy with application to industrial safety through the determination of fundamental combustion parameters and the study of detonation waves' structure and dynamics. He has co-authored more than 40 journal articles and has been awarded the Gérard de Soete Prize in 2010 and the J.H.S. Lee Young Investigator award in 2013 as a recognition of the quality of his work. In 2017, he was selected as a 1000 Young Talents of China.