Shock waves in polyatomic gases

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In this talk, we present the following three topics related to the shock waves in polyatomic gases with particular attention paid to the contribution to the field of nonlinear waves by Prof. Sugiyama:

(I)   Shock-induced phase transitions on the basis of the system of Euler equations and the equations of state of real gases [1].

(II)   Shock wave structure based on extended thermodynamics (ET) for polyatomic gases [2,3,4]. It is shown that the ET theory can explain the shock wave structure in a unified way and that the agreement between the theoretical prediction of the profile of the mass density and the experimental data is quite well.

(III) Brief review about ongoing subjects on the nonlinear waves based on the ET theory such as the Riemann problem, the sub-shock formation [5] and the outlook on the shock wave structure in dense gases and mixtures.

References

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