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Soot Formation in the Field of Combustion

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Abstract : A new chemical mechanism designed to study the process of forming the first aromatic ring (benzene) and polycyclic aromatic hydrocarbons (PAH) from a flame of acetylene (C2H2) has been developed. The mechanism developed, contains 50 chemical species involved in 268 reversible elementary reactions. The comparison between the results from modelling and experimental measurements allowed us to test the validity of the postulated mechanism in specific experimental conditions. Kinetic analysis of the flame by calculating the maximum rates for each elementary reaction, allowed us to identify key reactions pathways of consumption and formation of main precursors of soot.

Keywords : benzene, PAH, acetylene, modeling, flame, soot
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