

## Visualization of invisible reaction zone of H<sub>2</sub> molecules on the front of diffusion flame of propane

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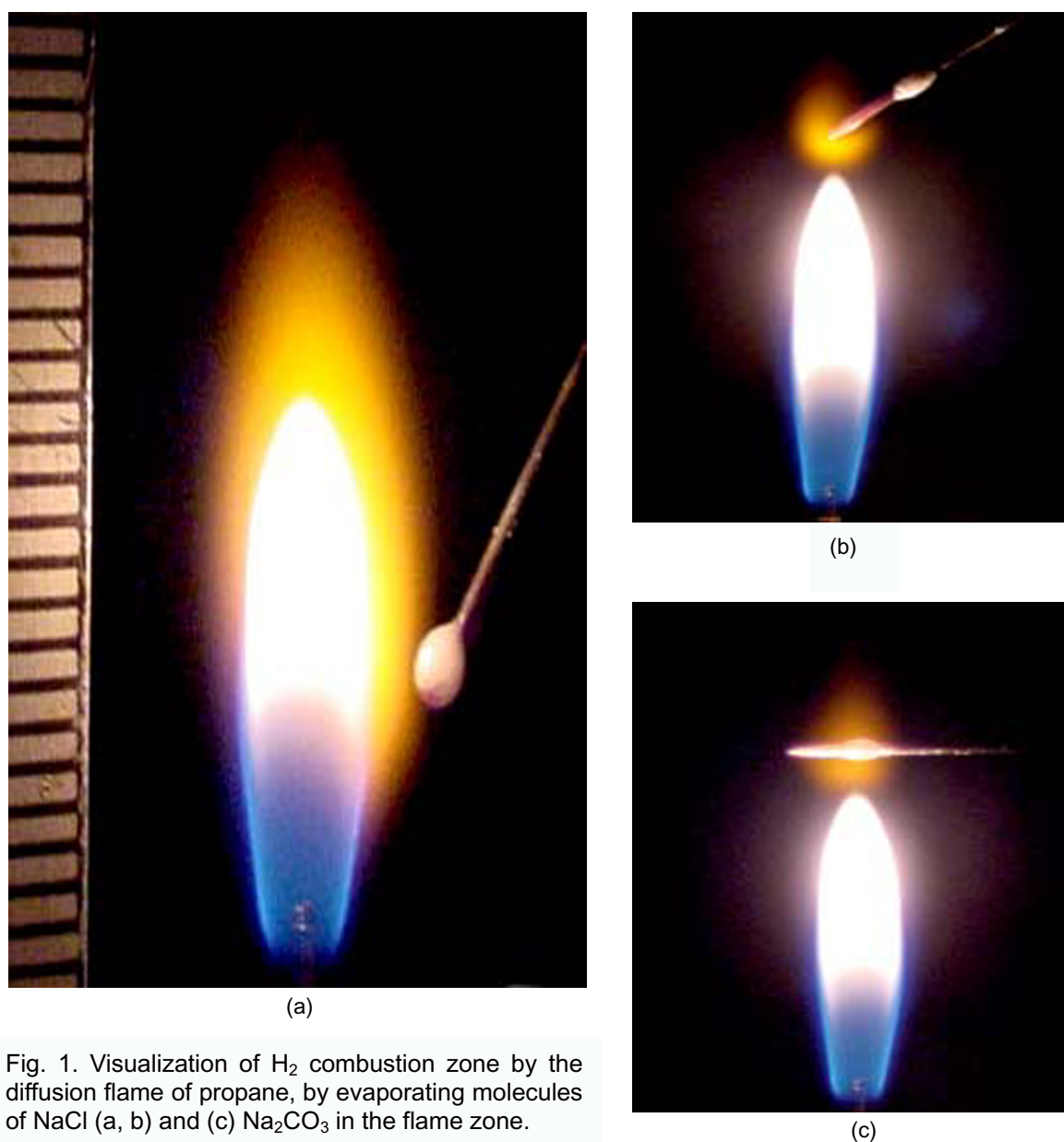


Fig. 1. Visualization of H<sub>2</sub> combustion zone by the diffusion flame of propane, by evaporating molecules of NaCl (a, b) and (c) Na<sub>2</sub>CO<sub>3</sub> in the flame zone.

Visualization of invisible zones in front of a flame of hydrocarbon substance (propane) in diffusion flame conditions are presented. Evaporating molecules of salt (Fig. 1(a), (b)) and two-carbonic sodium (Fig. 1(c)) in a zone of burning because of processes  $H + H + Na \rightarrow Na^* + H_2$  and  $H + OH + Na \rightarrow Na^* + H_2O$ , and the subsequent radiation stabilization of the excited atoms of sodium  $Na^* \rightarrow Na + h\nu$ , is drawn a zone of combustion for hydrogen molecules formed in non-equilibrium quantities and creating a new zone of front of the flame. The zone of burning of hydrogen in the horizontal direction is clearly less than 2 millimeters due to diffusion, but convective flow expands this zone up to 6 millimeters.