

3G06: PROMOTION OR INHIBITION OF HYDROGEN-AIR IGNITION BY IRON-CONTAINING COMPOUNDS.

*Gregory T. Linteris, Valeri I. Babushok*

*National Institute of Standards and Technology, USA*

**Comment by Takashi Tsuruda, National Research Institute of Fire and Disaster,  
Japan**

[tsuruda@fri.go.jp](mailto:tsuruda@fri.go.jp)

The stable form of iron oxide differs with the temperature. Do you consider the change of stable form of iron oxide in this study?

**Reply by Gregory Linteris**

[linteris@nist.gov](mailto:linteris@nist.gov)

We agree that the distribution of iron among possible iron intermediates will change with temperature, which can affect the efficiency of the catalytic cycles [1]. For the present work, the distribution of species may change at the ignition conditions (T inlet near 1000 K) where promotion occurs, as compared to conditions near the final temperature (around 2700 K), where inhibition occurs. While the numerical model automatically considers the changes in relative concentrations of intermediate species (through inclusion of reverse reaction rates determined through chemical equilibrium relations), in this paper we did not explicitly discuss the ramifications of changes in the equilibrium distributions due to temperature. It is a very good suggestion, and we would hope to do this in the future.

Reference:

[1] G.T. Linteris, M.D. Rumminger, V.I. Babushok, *Progress in Energy and Combustion Science* 34 (3) (2008) 288–329.