Autoignition Temperature Family Trends and an Improved Prediction Method

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Autoignition temperature (AIT) data in literature are frequently disparate and have high uncertainties. Examining the trends of AIT for chemical families that have well-defined homologous series can allow evaluation for internal consistency and provide phenomenological insight into the mechanisms that produce the observed trends. Building upon the knowledge gained from these family studies, a large experimental AIT data set is evaluated and used in the regression for parameters for an AIT estimation method originally developed by the late Dr. William H. Seaton. Improvements on the model of Seaton and underlying principles are presented and discussed.