Supplementary information for article

**Modelling of acetaldehyde and acetic acid combustion**

*Fekadu Mosisa Wako1, Gianmaria Pio1,\*, Ernesto Salzano1*

1 Dipartimento di Ingegneria Civile, Chimica, Ambientale e dei Materiali, Università degli studi di Bologna, Via Terracini 28, 40131, Bologna, Italia

\*Author to whom correspondence should be addressed: [gianmaria.pio@unibo.it](mailto:gianmaria.pio@unibo.it)

The change of rate constant with temperature for some influential reactions are provided in the following Figures.



Figure S1: The effect of temperatures on the rate constants of CH3COOH ↔ CH4 + CO2 (R1).



Figure S2: The effect of temperatures on the rate constants of CH3COOH ↔CH2CO + H2O (R2). Please note that KiBo1.0 and KiBo2.0 have the same rate constants



Figure S3: The effect of temperatures on the rate constants of CH3COOH + OH ↔ CH3COO + H2O (R3). Please note that KiBo1.0 and KiBo2.0 have the same rate constants



Figure S4: The effect of temperatures on the rate constants of CH3COOH + OH ↔ CH2COOH + H2O (R4). Please note that KiBo1.0 and KiBo2.0 have the same rate constants



Figure S5: The effect of temperatures on the rate constants of CH3COOH + H ↔ CH3COO + H2 (R5). Please note that KiBo1.0 and KiBo2.0 have the same rate constants



Figure S6: The effect of temperatures on the rate constants of CH3COOH + H ↔ CH2COOH + H2 (R6). Please note that KiBo1.0 and KiBo2.0 have the same rate constants



Figure S7: The effect of temperatures on the rate constants of CH3CHO + OH ↔ CH3CO + H2O (R7). Please note that KiBo1.0 and KiBo2.0 have the same rate constants



Figure S8: The effect of temperatures on the rate constants of CH3CHO + OH ↔ CH2CHO + H2O (R8). Please note that KiBo1.0 and KiBo2.0 have the same rate constants



Figure S9: The effect of temperatures on the rate constants of CH3CHO (+ M) ↔ CH3 + HCO (+ M) (R9). Please note that KiBo1.0 and KiBo2.0 have the same rate constants



Figure S10: The effect of temperatures on the rate constants of CH3CHO + H ↔ CH3CO + H2 (R10). Please note that KiBo1.0 and KiBo2.0 have the same rate constants



Figure S11: The effect of temperatures on the rate constants of CH3CHO + H ↔ CH2CHO + H2 (R11). Please note that KiBo1.0 and KiBo2.0 have the same rate constants