

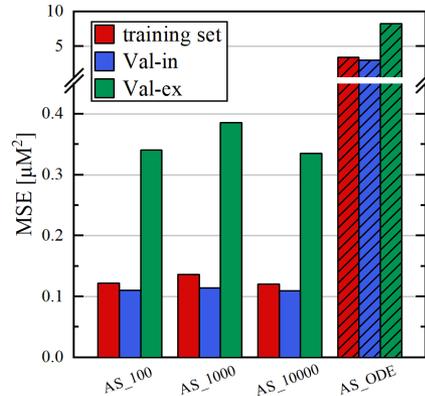
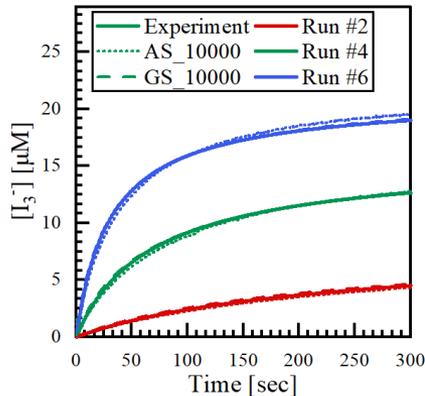
Theme: Theory-driven Machine Learning for Reaction Analysis in Flow Field

Purpose:

- (1) Quantitative analysis of complex reaction system
- (2) Modeling of chemical reaction in turbulence

Achievement:

- (1) Highly accurate prediction of Dushman reaction kinetics by combining ODE solver and neural network
- (2) 1-dimensional partial differential equation to quantitative analysis of mixing condition using chemical reaction



$$\frac{\partial C_{H^+}}{\partial t} = -\frac{1}{\tau'(V_{span})} \cdot \frac{\partial C_{H^+}}{\partial V_{span}} - \frac{\tau''(V_{span})}{\{\tau'(V_{span})\}^2} \cdot C_{H^+} + r_{H^+}$$

