

Curiosity Thread: A Formula Can Be Useful Without Being the Whole Story

Curiosity Reading | CheAI Research Inc.

When a map shows a reliable shortcut, it is useful even if it does not explain every feature of the landscape. A rate law plays a similar role. It summarizes how measured initial rates changed with selected concentrations under stated conditions.

The key move is comparison. If changing only A by a factor of two changes rate by a factor of two, a first-power dependence on A is a useful model for that data. If changing only B by a factor of two changes rate by a factor of four, a second-power dependence on B is consistent with the pattern. Those exponents come from the measurements, not from balancing coefficients.

The model earns trust by predicting a new data point, being tested with repeats, and staying within its stated conditions. It still does not identify every molecular step. That respectful gap between a good model and an overclaimed story is a strength of scientific reasoning.