A model to Estimate and Predict the reaction between of CO_2 and CH_4 in a Dielectric Barrier Discharge

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A linear regression model was suggested to estimate and predict the CO_2 reforming of CH_4 in a coaxial dielectric barrier discharge reactor immersed in an oil bath. The model had input parameters as predictor variables (applied voltage, ratio of CH_4/CO_2, and total flow rate in the feed), output parameters as observed variables, the molar flow rates of reactants (CH_4, CO_2, CO, H_2, and by-products), and energy efficiencies. More than 70% of the output parameter variance could be explained by the input parameter. Therefore, the model would be useful to optimize the experiments in the reaction between of CO_2 and CH_4 by a dielectric barrier discharge reactor.