

Modifikasi analytical semi empirical model asem sebagai fungsi temperatur dan tekanan untuk merepresentasikan yield renewable diesel melalui reaksi hidredeoksigenasi = Analytical semi empirical model asem modification as function of temperature and pressure to renewable diesel yield through hydrodeoxygenation reaction

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Abstrak

Penelitian berbasis simulasi dan permodelan dalam proses sintesis renewable diesel perlu untuk dilakukan agar dapat menganalisis proses reaksi sintesis renewable diesel lebih lanjut. Selama ini, penentuan kondisi dalam proses sintesis renewable diesel melalui reaksi hidredeoksigenasi masih melalui proses trial and error dan belum memiliki pedoman yang tetap. Untuk itu, pada penelitian ini dilakukan modifikasi persamaan model prediktif dengan metode Analytical Semi Empirical Model (ASEM) agar dapat digunakan untuk menggambarkan produk hasil proses sintesis renewable diesel melalui mekanisme reaksi hidredeoksigenasi yang melibatkan variasi temperatur dan tekanan. Model dimodifikasi dan divalidasi dengan menggunakan data-data historikal dari sintesis renewable diesel melalui reaksi hidredeoksigenasi sebagai fungsi temperatur dan tekanan yang telah dilakukan di laboratorium rekayasa dan pengembangan bahan kimia dan alam (RPKA) Departemen Teknik Kimia Universitas Indonesia. Dari penelitian ini, dihasilkan model-model yang sesuai serta kondisi operasi yang optimum untuk tiap-tiap bahan baku.

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The research in synthesis of renewable diesel based on simulation and modeling needs to be done more, in order to analyze the process itself further. For now, the criteria of operation conditions need in the process are based on trial and error method, and have not had any equation that has been validated. For that purpose, this research modified the predictive model we used in Analytical Semi Empirical Model (ASEM) method to represent the yield of renewable diesel synthesis process, based on the function of temperature and pressure. The model was modified and validated by using historical datas from the former researches in synthesizing renewable diesel, which has been done in Rekayasa dan Pengembangan Bahan Kimia dan Alam (RPKA) laboratorium in Chemical Engineering Department of University of Indonesia. This research produces the models of the reaction and optimum operation condition which can be used separately for each material used.