

**PENGARUH KONSENTRASI MODULATOR, SUHU SINTESIS, DAN
RASIO BDC:Zr TERHADAP KARAKTER UiO-66 (KAJIAN
LITERATUR)**

SKRIPSI

diajukan untuk memenuhi sebagian syarat memperoleh gelar Sarjana Sains pada
Program Studi Kimia



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Sains pada Program Studi Kimia Departemen Pendidikan Kimia Fakultas
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ABSTRAK

UiO-66 adalah salah satu MOF yang paling banyak dipelajari karena stabilitas mekanik, termal, dan kimianya yang sangat tinggi. Ditemukan bahwa terjadi perubahan kinerja UiO-66 sebagai katalis dan tempat penyimpanan gas hidrogen yang dipengaruhi oleh konsentrasi modulator, suhu sintesis, dan rasio BDC:Zr. Perubahan kinerja tersebut menunjukkan adanya perubahan karakter UiO-66 yang diakibatkan oleh ketiga faktor tersebut. Tujuan dari pekerjaan ini adalah untuk mengetahui pengaruh konsentrasi modulator, suhu sintesis, dan rasio BDC:Zr terhadap karakter UiO-66. Metode yang digunakan pada pekerjaan ini yaitu studi literatur, dimana pengumpulan data dilakukan dengan membaca literatur sebelumnya yang sesuai dengan topik penelitian untuk menyelesaikan rumusan masalah yang sedang diteliti. Hasil revidu menunjukkan bahwa peningkatan konsentrasi asam asetat, asam format, dan asam trifloroasetat secara umum meningkatkan ukuran kristal, luas permukaan BET, volume pori, zeta potensial, dan stabilitas koloid UiO-66. Modulator dengan tingkat keasaman yang lebih tinggi menghasilkan cacat UiO-66 dengan konsentrasi yang lebih tinggi. Peningkatan suhu sintesis dan rasio BDC:Zr menyebabkan penurunan luas permukaan BET dan volume pori UiO-66.

Kata Kunci: konsentrasi modulator, suhu sintesis, rasio BDC:Zr, karakter UiO-66

ABSTRACT

UiO-66 is one of the most studied MOFs due to its very high mechanical, thermal and chemical stability. It was found that there was a change in the performance of UiO-66 as a catalyst and hydrogen gas storage which was influenced by the concentration of the modulator, the synthesis temperature, and the ratio of BDC:Zr. These performance changes indicate a change in the character of UiO-66 caused by these three factors. The purpose of this work is to determine the effect of modulator concentration, synthesis temperature, and BDC:Zr ratio on the character of UiO-66. The method used in this work is a literature study, where data collection is done by reading previous literature that is in accordance with the research topic to complete the formulation of the problem being studied. The results of the review showed that increasing concentrations of acetic acid, formic acid, and trifluoroacetic acid in general increased crystal size, BET surface area, pore volume, zeta potential, and colloidal stability of UiO-66. Modulators with higher acidity produced higher concentrations of UiO-66 defects. Increasing the synthesis temperature and the ratio of BDC:Zr caused a decrease in the surface area of BET and the pore volume of UiO-66.

Keywords: *modulator concentration, synthesis temperature, BDC:Zr ratio, UiO-66 character*

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