

PENGARUH PENAMBAHAN AIR PADA SINTESIS *SILICA GEL* DARI TETRAETILORTOSILIKAT

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RINGKASAN

Telah dilakukan sintesis *silica gel* menggunakan TEOS. Pada pembuatan *silica gel* ini, reaksi yang berperan di dalamnya adalah hidrolisis dan polikondensasi. Jumlah air yang digunakan sebagai reaktan akan menentukan derajat hidrolisis dan kondensasi sehingga akan berpengaruh pada karakter *silica gel*. Hal yang dikaji adalah pengaruh volume air terhadap luas permukaan spesifik, total volume pori, dan rata-rata radius pori *silica gel*.

Sintesis *silica gel* dilakukan dengan mereaksikan TEOS, etanol, dengan variasi volume air serta menggunakan katalis asam klorida. Gel padat transparan dikeringkan dalam oven pada temperatur 80°C selama 18 jam sehingga diperoleh *silica gel* kering. Karakterisasi hasil dilakukan dengan spektrofotometer inframerah dan BET *surface area analyzer*.

Disimpulkan bahwa variasi volume air yang digunakan menghasilkan derajat hidrolisis yang berbeda dan penggunaan air secara stoikiometri menghasilkan *silica gel* yang mempunyai karakter yang paling baik dengan rata-rata radius pori terendah, total volume pori dan luas permukaan spesifik tertinggi berturut-turut yaitu $9,73 \times 10^{-10}$ m , $240,76 \times 10^{-9}$ m³/g dan 494, 41 m²/g.

SUMMARY

The synthesis of silica gel using tetraethoxysilane has been studied with reactions of hydrolysis and polycondensation. The amount of water used as reactant will determine the degree of hydrolysis and condensation. For it will influence the characteristic of silica gel. The effect of varying water volume on characteristic of silica gel has been investigated.

Synthesis of silica gel was conducted by reaction of tetraethoxysilane, ethanol, variation on water volume, in the presence of hydrochloric acid. After transparent solid gel was dried at 80°C for 18 hours, xerogel was obtained. The results characterized by infrared spectrophotometer and BET surface area analyzer.

It could be concluded that variation of water volume influenced different degree of hydrolysis and the stoichiometric amount of water volume influenced the best character of silica gel: the lowest average pore size, the highest pore volume and specific surface area than the others were 9.73×10^{-10} m, 240.76×10^{-9} m³/g, 494, 41 m²/g respectively.

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