

**PENGARUH TEMPERATUR SINTESIS TERHADAP KARAKTERISTIK
POLYDIMETHYLSILOXANE (PDMS) YANG DIBUAT DENGAN TEKNIK
*RING OPENING POLYMERIZATION (ROP)***

SKRIPSI

diajukan untuk memenuhi sebagian syarat untuk memperoleh gelar Sarjana Sains

Departemen Pendidikan Fisika

Program Studi Fisika

Konsentrasi Material



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Sebuah skripsi yang diajukan untuk memenuhi salah satu syarat
memperoleh gelar Sarjana Sains di Program Studi Fisika
Konsentrasi Material
FPMIPA UPI

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Dengan ini saya menyatakan bahwa skripsi dengan judul “Pengaruh Temperatur Sintesis Terhadap Karakteristik *Polydimethylsiloxane* (PDMS) Yang Dibuat Dengan Teknik *Ring Opening Polymerization* (ROP)” ini beserta seluruh isinya adalah benar-benar karya saya sendiri. Saya tidak melakukan penjiplakan atau pengutipan dengan cara-cara yang tidak sesuai dengan etika ilmu yang berlaku dalam masyarakat keilmuan. Atas pernyataan ini, saya siap menanggung risiko/sanksi apabila dikemudian hari ditemukan adanya pelanggaran etika keilmuan atau ada klaim dari pihak lain terhadap keaslian karya saya ini.

Bandung, Juni 2020

Yang membuat pernyataan,

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ABSTRAK

Polydimethylsiloxane (PDMS) merupakan salah satu polimer sintetik yang banyak digunakan pada biomedis. Salah satu kegunaan PDMS adalah sebagai pengganti cairan vitreous humor. Dalam penelitian ini, dilakukan sintesis melalui polimerisasi pembukaan cincin atau *ring opening polymerization* dengan temperatur sintesisnya divariasikan sebesar 140 °C, 150 °C, dan 170 °C. PDMS hasil sintesis kemudian dikarakterisasi menggunakan alat karakterisasi, seperti viskometer, refraktometer, tensiometer dan FTIR. Setelah karakterisasi, nilai viskositas masing-masing PDMS adalah sebesar 0,088 Pa.s, 0,332 Pa.s, dan 1,210 Pa.s. Untuk nilai indeks bias masing-masing PDMS diperoleh sebesar 1,4001, 1,4014, dan 1,4032. Adapun nilai tegangan permukaan masing-masing PDMS yang terukur adalah sebesar 21,5 mN/m, 21,8 mN/m, dan 22,0 mN/m. Ketiga data PDMS memiliki gugus fungsi serapan yang sama dengan PDMS standar, yaitu terdapat getaran deformasi CH₃ aromatik, ikatan Si-O-Si, Si-CH₃, Si-CH₃ dan kelompok metilen. Dari ketiga data PDMS, PDMS dengan temperatur sintesis 170 °C memiliki hasil yang optimal untuk menjadi cairan pengganti vitreous humor. Hal ini dikarenakan nilai karakteristiknya mendekati karakteristik vitreous humor.

Kata kunci: *Polydimethylsiloxane* (PDMS), Vitreous Humor, Viskositas, Indeks Bias, Tegangan Permukaan, Gugus Fungsi

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