

## SINTESIS DAN ANALISIS METHACRYLOYL-L-ALANINE METHYL ESTER MENGGUNAKAN FOURIER TRANSFORM NUCLEAR MAGNETIC RESONANCE

Tri Darwinto

Pusat Teknologi Bahan Industri Nuklir (PTBIN) - BATAN  
Kawasan Puspiptek, Serpong 15314, Tangerang

### ABSTRAK

**SINTESIS DAN ANALISIS METHACRYLOYL-L-ALANINE METHYL ESTER MENGGUNAKAN FOURIER TRANSFORM NUCLEAR MAGNETIC RESONANCE.** Telah dilakukan sintesis *methacryloyl-L-alanine methyl ester* dengan cara mereaksikan asam metakrilat dengan *L-alanine ester hydrochloride* dalam trietilamin pada suhu 90 °C. Polimer hidrogel *polymethacryloyl-L-alanine methyl ester* banyak digunakan untuk diagnosis dan terapi penyakit tumor pembuluh darah. Struktur molekul *methacryloyl-L-alanine methyl ester* dapat dianalisis dengan *Fourier Transform-Nuclear Magnetic Resonance (FT-NMR)* untuk analisis atom karbon (<sup>13</sup>C) menggunakan model pengukuran *Distortionless Enhancement by Polarization Transfer (DEPT)*, baik dengan adanya *coupling* maupun tanpa adanya *coupling* dari proton (<sup>1</sup>H). Hasil analisis menunjukkan bahwa model pengukuran *DEPT FT-NMR* baik dengan adanya *coupling* maupun tanpa adanya *coupling* dari <sup>1</sup>H merupakan metode yang paling cepat, tepat dan akurat untuk analisis struktur molekul senyawa organik khususnya *methacryloyl-L-alanine methyl ester*.

**Kata kunci :** FT-NMR, DEPT, Coupling, Decoupling, (Poly) Methacryloyl-L-alanine methyl ester

### ABSTRACT

**SYNTHESIS AND ANALYSIS OF METHACRYLOYL-L-ALANINE METHYL ESTER USING FOURIER TRANSFORM NUCLEAR MAGNETIC RESONANCE.** Methacryloyl-L-alanine methyl ester was synthesized by reacting methacrylic acid with L-alanine methyl ester hydrochloride in triethylamine at temperature of 90 °C. Hydrogel polymer of poly(methacryloyl-L-alanine methyl ester) was much used for diagnosis and therapy of vascular tumor. The molecular structure of methacryloyl-L-alanine methyl ester analyzed by Fourier Transform Nuclear Magnetic Resonance (FT-NMR) for analyzing of carbon atom (<sup>13</sup>C) using Distortionless Enhancement by Polarization Transfer (DEPT) measurement mode with coupling as well as without coupling from proton atom (<sup>1</sup>H). Molecular structure analysis results showed that DEPT FT-NMR measurement mode with coupling as well as without coupling from <sup>1</sup>H was very fast, exact and accurat method for molecular analysis of organic compound especially Methacryloyl-L-alanine methyl ester.

**Key words :** FT-NMR, DEPT, Coupling, Decoupling, (Poly)Methacryloyl-L-alanine methyl ester