

**Debora Paskarina Sormin : 2018. Pengaruh Variasi Tingkat Keasaman (pH) Terhadap Pembentukan Hidroksiapatit Berbasis Nano Koral dengan Menggunakan Metode Sol Gel. Skripsi ini di bawah bimbingan Drs. Siswanto, M.Si dan Dyah Hikmawati, S.Si, M.Si, Departement Fisika, Fakultas Sains dan Teknologi, Universitas Airlangga.**

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### ABSTRAK

Telah dilakukan sintesis hidroksiapatit menggunakan metode sol-gel dengan variasi derajat keasaman (pH). Sumber hidroksiapatit diperoleh dari koral murni. Berdasarkan uji PSA (*Particle Size Analyzer*), koral murni yang dimilling dengan HEM (*High Energy Milling*) selama 21 jam 30 menit menghasilkan serbuk berukuran 58,7 nm. Kalsium hidroksida ( $\text{Ca(OH)}_2$ ) dari serbuk koral kemudian direaksikan dengan asam fosfat ( $\text{H}_3\text{PO}_4$ ) menggunakan metode sol-gel. Hasil sintesis kemudian mengalami variasi pH dari nilai 5 sampai 13 dengan interval 2 dan dikarakterisasi menggunakan XRD (*X-Ray Diffractometer*). Hasil XRD menunjukkan bahwa nilai pH yang paling optimal untuk sintesis hidroksiapatit adalah 11 dengan fraksi volume, derajat kristalinitas, dan ukuran kristalit masing-masing 92,7%, 86,5%, dan 6,98 nm.

**Kata Kunci :** Hidroksiapatit, Nano-Koral, pH, Sol-Gel

**Debora Paskarina Sormin : 2018. The Effect of Acidity (pH) Variations in the Formation of Nano-Coral Based Hydroxyapatite with Sol-Gel Methods. This final assignment is under the guidance of Drs. Siswanto, M.Si and Dyah Hikmawati, S.Si, M.Si, Physics Department, Faculty of Science and Technology, Airlangga University.**

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### **ABSTRACT**

Synthesizing hydroxyapatite with varying acidity (pH) using sol-gel method had been done. The source of hydroxyapatite was obtained from pure coral reef. The result of PSA measurement (Particle Size Analyzer) showed the nano coral powder that had been milled by HEM (High Energy Milling) for 21 hours and 30 minutes generated the particle size of 58,7 nm. Calcium hydroxide produced by pure coral reef was reacted with phosphoric acid ( $H_3PO_4$ ) using sol-gel method. The consequence of synthesis process then varied by the acidity value by 5 to 13 with the interval of 2 and characterized with XRD (X-Ray Diffractometer). The optimum value of pH needed in synthesizing hydroxyapatite was 11, which generated volume fraction, degree of crystallization, and size of crystallite of hydroxyapatite of 92,7%, 86,5%, and 6,98 nm.

**Key words:** Hydroxyapatite, Nano-Coral, pH, Sol-Gel