

# Kinetika pertumbuhan kristal barium heksaferit di substitusi Mn-Ti melalui proses pemaduan mekanik = Crystal growth kinetics of barium hexaferrite substituted by Mn-Ti derived from mechanical alloying process

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Abstrak

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Penelitian tentang kinetika pertumbuhan kristal barium heksaferit disubstitusi Mndan Ti dengan komposisi BaFe<sub>9.6</sub>Ti<sub>1.2</sub>Mn<sub>1.2</sub>O<sub>19</sub> yang dibuat melalui proses pemaduan mekanik telah dilakukan. Ukuran kristal rata-rata BaFe<sub>9.6</sub>Ti<sub>1.2</sub>Mn<sub>1.2</sub>O<sub>19</sub> didapat dengan metode Whole Powder Pattern Modeling (WPPM) pada software PM2K. Ukuran kristal bertambah secara bertahap dan akhirnya mencapai ukuran maksimum. Dari pemanasan isothermal, kinetika pertumbuhan kristal dapat dijelaskan oleh persamaan Avrami dengan energi aktivasi pertumbuhan kristal 51,76 kJ/mol; yang dihasilkan sebesar 51.76 kJ/mol.

**ABSTRACT**

A study on the kinetics of crystal growth of barium hexaferrite substituted by Mn ? Ti with composition BaFe<sub>9.6</sub>Ti<sub>1.2</sub>Mn<sub>1.2</sub>O<sub>19</sub> produced by mechanical alloying was carried out. The grain size of BaFe<sub>9.6</sub>Ti<sub>1.2</sub>Mn<sub>1.2</sub>O<sub>19</sub> was estimated by the Whole Powder Pattern Modeling (WPPM) in PM2K software. The grain size increases gradually, and finally ceases to reach an ultimate value regardless of annealing time. From isothermal anneals, the grain growth kinetics can be described by Avrami's equation and activation energy for grain growth Q has been determined to be 51,76 kJ/mol.