EFFECT OF ZN MASS AND HYDROTHERMAL TEMPERATURE ON THE STRUCTURE AND ELECTRICAL PROPERTIES OF GRAPHENE MATERIAL

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Abstract
Today, technology is growing rapidly in various fields. However, along with the rapid development of technology need a new material that can meet what technology need most. Such a material that is small and light, but with a good electrical, thermal and mechanical properties. That material is graphene. In this research, graphene was synthesis using hydrothermal method and use zinc as a reducing agent. Graphene was synthesized at different temperatures and mass off Zn powder. X-ray diffraction (XRD) analysis confirmed that graphene can be made by hydrothermal process with Zn powder as reducing agent. As increasing temperature the diameter of crystal was decreased. The morphology of the graphene was studied to help understand their electrical properties. A wrinkled and sheet structure of graphene was observed by scanning electron microscope (SEM), which was considered to be favorable for charge transfer. Fourier Transform Infrared spectroscopy (FTIR) analysis confirmed that with the reduction process the functional group can be reduced by adding Zn. By adding more Zn powder the functional group was disappear and its make the electrical conductivity of graphene increased. Four Point Probe test used to measure the electrical conductivity. Graphene can be synthesized by hydrothermal process. And the best variation of mass of Zn and hydrothermal temperature is 2.4 grams and 180°C. The highest electrical conductivity is 0.12526 S/m.

Keywords: Grafit Oksida, Graphene Oksida, Graphene, Hydrothermal, Konduktivitas Elektrik
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