KINERJA GRAFITIK KARBON (GRAFENA BERLAPIS NANO DAN N-GRAFENA BERLAPIS NANO) DARI KELAPA (COCOS NUCIFERA L.) SEBAGAI ELEKTRODA BATERAI PRIMER

Sub Judul:

Optimasi Proses Parameter Pada Sintesa Grafin dari Tempurung Kelapa melalui Proses Kimia dan Pirolisisserta Doping unsur Logam dan Nitrogen

Laporan Penelitian

Sebagai Salah Satu Syarat untuk Menyelesaikan Program Profesi pada Program Studi Pendidikan Profesi Insinyur Sekolah Pascasarjana Universitas Andalas

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Abstract

Ever since graphene was discovered and recognized for its superior strength and electrical properties, efforts to mass-produce it have accelerated. Initially, graphene was derived from graphite exfoliation using silicon oxide. However, the most straightforward method of producing graphene today is from graphite or coal mining, given their high purity and carbon content. As we look to the future, it's crucial to utilize renewable natural materials to meet the demand for this form of carbon. One such resource is the densely packed and highly concentrated carbon found in coconut shells, which are readily available across all Indonesian islands.

In this study, a graphene synthesis technique using coconut shell charcoal and the modified Hummers method was employed. This method is commonly used to synthesize graphene from graphite and graphite oxide. The coconut shell charcoal was prepared using ball milling and then separated using a 200 mesh sieve. After sieving, the graphite was mixed with sulfuric acid, potassium permanganate, distilled water, and hydrogen peroxide until a dark brown precipitate formed, indicating the presence of graphene oxide. The graphene oxide was then characterized using FTIR, SEM, UV-Vis, and EDX. The results revealed a graphene purity of up to 71%. The detection of the oxygen element indicated a shift of the XRD diffraction peak to the left (graphene oxide). The presence of O-H and C=C functional groups in the FTIR test confirmed the presence of graphene.