

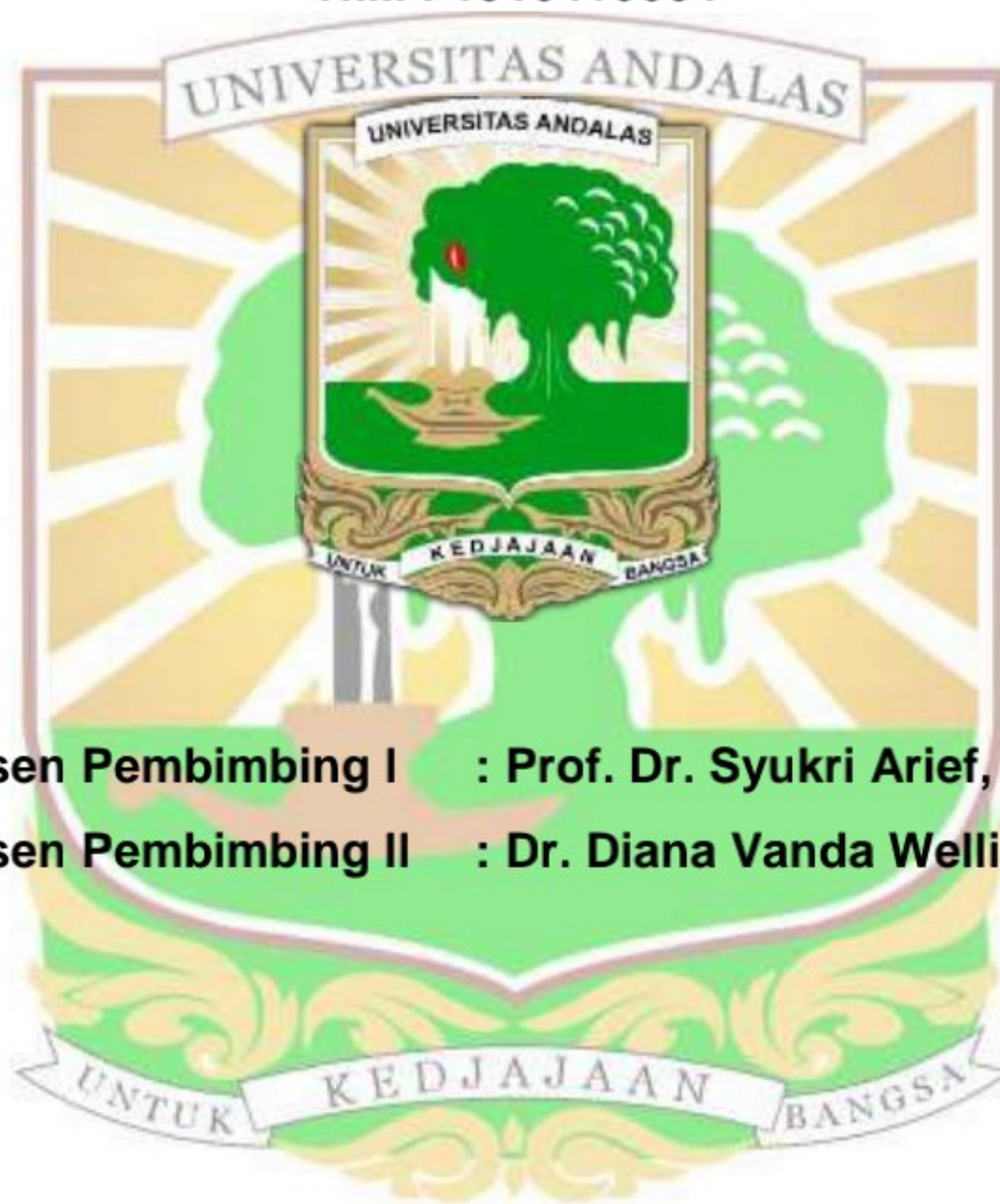
**SINTESIS NANOPARTIKEL SERIUM OKSIDA (CeO_2) MENGGUNAKAN
EKSTRAK DAUN *UNCARIA GAMBIR ROXB* SEBAGAI *CAPPING AGENT*
DENGAN METODE PRESIPITASI**

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ABSTRACT
SYNTHESIS OF CERIUM OXIDE NANOPARTICLES (CeO₂) USING GAMBIER
***UNCARIA GAMBIR ROXB* LEAV EXTRACT AS CAPPING AGENT USING**
PRECIPITATION METHOD

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Cerium oxide (CeO₂) has been widely used in various applications, as a catalyst, absorber of UV light, biosensors, cosmetics such as sunscreen lotion, and biomedical applications. In this study, cerium oxide (CeO₂) was successfully synthesized using cerium nitrate hexahydrate (Ce(NO₃)₃·6H₂O) and additional gambier leaf extract as a capping agent by precipitation method with sonication and without sonication. The obtained cerium oxide particles were characterized by Fourier Transform Infrared Spectroscopy (FTIR), X-Ray Diffraction (XRD), and Scanning Electron Microscopy (SEM). The results of the FTIR analysis show the absorption band of the hydroxyl group (OH) at wave number 3000's cm⁻¹, then there is a vibration of cerium (Ce-O-Ce) at wave number 1300's cm⁻¹ and also stretching Ce-O at wave numbers in the 400's cm⁻¹ which indicates the formation cerium oxide. The results of the XRD analysis showed confirmed the formation of cerium oxide particles with and cubic crystal system and the XRD pattern of cerium oxide particles showed a diffraction pattern that was in accordance with the ICSD # 88759 standard. The crystal size obtained from the results of synthesis using the precipitation method ranged from 22-52 nm. The results of the SEM analysis carried out showed that the particle images were still not uniform and irregular in shape. In addition, in the SEM image, the synthesized particles still experience agglomeration, but the particles synthesized with the addition of gambier extract experienced a few agglomerations due to the role of gambier as a capping agent which prevents each particles from agglomerations so that particles thae are more organized and smaller in size are obtained.

Keywords: Cerium Oxide, capping agent, precipitation, particle, gambier, agglomeration