

## ABSTRAK

### PEMBUATAN LAPISAN TIPIS PERAK (Ag) NANOWIRES DENGAN VARIASI PERULANGAN MENGGUNAKAN TEKNIK *SPRAY COATING* UNTUK APLIKASI ELEKTRODA KONDUKTIF TRANSPARAN

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Elektroda konduktif transparan (TCE) berbasis AgNWs dibuat pada substrat polikarbonat (PC) dengan variasi perulangan menggunakan teknik *spray coating*. AgNWs disintesis menggunakan *polyvinyl pyrrolidone* (PVP) dengan metode *polyol*. AgNWs yang diperoleh memiliki diameter dan panjang masing-masing 176,13 nm dan 28,58  $\mu\text{m}$ . Lapisan AgNWs menghasilkan resistansi terendah pada 3 perulangan sebesar  $4,98 \text{ } \Omega \cdot \text{sq}^{-1}$  dengan transmitansi 23,81%. Konduktivitas optik lapisan AgNWs diperoleh sekitar  $1,8\text{-}2,32 \times 10^5 \text{ S}\cdot\text{m}^{-1}$ , indeks bias sekitar 1,93 hingga 2,26 dan energi gap lapisan AgNWs diperoleh sekitar 3,79 hingga 3,84 eV. Meningkatnya perulangan, mengakibatkan ketebalan dan konduktivitas optik semakin meningkat serta resistansi dan transmitansi semakin menurun.

**Kata kunci:** Energi gap, Ketebalan Lapisan, Konduktivitas Optik, Lapisan AgNWs, Transmitansi

## ABSTRACT

### FABRICATION SILVER (Ag) NANOWIRES THIN LAYER WITH VARIATION CYCLE USING SPRAY COATING TECHNIQUE FOR TRANSPARENT CONDUCTIVE ELECTRODE APPLICATION

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*Transparent Conductive Electrode (TCE) film based on silver nanowires (AgNWs) were fabricated onto a polycarbonate (PC) substrate with variation cycle using spray coating technique. AgNWs were synthesized using polyvinyl pyrrolidone (PVP) by polyol method. AgNWs obtained has diameter and length of 17.13 nm and 28.58  $\mu\text{m}$ , respectively. The AgNWs film produces lowest sheet resistance at 3 cycle of 4.98  $\Omega/\text{sq}$  with a transmittance of 23.81 %. The optical conductivity of AgNWs film was obtained about  $1.8\text{-}2.32 \times 10^5 \text{Sm}^{-1}$ , the refractive index obtained about 1,93 to 2.26 and the band gap energy obtained about 3.79 to 3.84 eV. Increased cycle, affect the thickness and optical conductivity increases and resistance and transmittance decreases.*

*Keywords: AgNWs Film, Layers Thickness, Optical Conductivity, Sheet Resistance, Transmittance*