ABSTRACT

This research aimed to study the effect of cleaned substrate and a dried sample of WS_2 on flakes distribution, optical, and electrical properties on a thin layer WS_2. The thickness was modified using the liquid-phase exfoliation method. The sample deposited on PET and ITO/PET substrate using a drop-casting method. The substrate cleaned with Elmasonic S10 sonicator in acetone, ethanol, and aqua-DM solution with duration for 1, 3, and 5 minutes for each solution. The drying process was carried out in an Oxone OX-858 oven with a length of time, for PET and ITO/PET substrate was 2 hours, and 3 hours, respectively, and the temperature was also varied for 60 ºC, 70 ºC, and 80 ºC. It was observed that substrates sonicated for 3 and 5 minutes had some scratches on the surface compared the ones sonicated for 1 minute. The results of the drying sample at 60 ºC showed that the sample on the substrate was not dried yet. At a temperature of 80 ºC the substrate was damaged and curved, while the sample at a temperature 70 ºC shows that the sample was well dried. The electrical properties increased with the increasing of the drying temperature because more solvents were evaporated. WS_2 on the ITO/PET substrates cannot be characterized by its electrical properties because the ITO/PET conductivity was dominant.

***Keywords**: WS_2, Substrate Cleaning, PET, ITO/PET, Drying Sample.*