ABSTRACT

Nanoparticles (NPs) have been utilized in many different sectors due to their properties. The properties of nanoparticles were controlled based on several parameters applied in the synthesis process such as the temperature and the material concentration. The objectives of this study were to compare the desired results of non-spherical nanoparticles with different synthesis procedures by characterizing them qualitatively. There were 4 different synthesis procedures employed in the study, which includes 2 variations of the Aherne approach, Ag-Pt nanoparticle core-shell approach, and bimetallic Ag-Pt nanoparticles core-shell approach. While for the qualitative characterization of the results, there were UV-Vis spectroscopy and scanning electron microscope used in the study.

Based on the spectrometer line progression result, it showed that the best NP synthesis method was by employing the Bimetallic Ag-Pt NP Core-Shell approach. The most suitable combinations of parameter was using the reducing agent of Na_3CA and $PtCl_4$ with the volume of 15 µL, 30 µL, and 45 µL. While based on the SEM imaging instrumentation, the best result was still from the Bimetallic Core-Shell Ag-Pt NP procedure, with the parameter combination of 90 µL addition of Na_3CA and 15 µL of $PtCl_6$. As from the results obtained, it can be concluded that the synthesizing approach and combination of a stable non-spherical NP was a success.

Keywords: *Synthesis of Non-spherical Nanoparticle, Silver Nanoparticle, Platinum Nanoparticle, Scanning Electron Microscopy, UV-Vis Spectroscopy.*