

Abstract Book

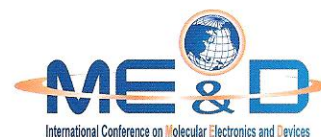
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# Organic solar cell using the silver nanoprisms

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We present the enhanced performance of organic photovoltaic cells (OPVCs) based on poly (3-hexylthiophene) (P3HT) and [6,6]-phenyl C<sub>61</sub> butyric acid methyl ester (PCBM) blends through localized surface plasmon resonance<sup>[1]</sup> (LSPR) incorporating with silver nanoprisms (Ag NPs) into the poly (3,4-ethylenedioxythiophene) : poly (4-styrenesulfonate), PEDOT:PSS buffer layer. The Ag NPs with tunable in-plane dipole LSPR band were fabricated by seed-mediated growth method<sup>[2]</sup>, which is a simple and efficient process that can control the absorption characteristics of Ag NPs. In order to study characteristics of OPVCs depending on the concentration and LSPR band of Ag NPs, the OPVCs were fabricated using different concentrations of Ag NPs and the photoresponsive current – voltage characteristic curve were measured under AM 1.5 Global solar conditions. The power conversion efficiency of OPVCs incorporating Ag NPs is compared with that of reference OPVCs without Ag NPs. The enhanced performance of plasmonic OPVCs might be originated from the strong coupling between the surface plasmon and enhanced optical absorption.

## References

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