6th International Conference on
Organic & Inorganic Chemistry
August 08-09, 2019 | Amsterdam, Netherlands

Recent advances in organic solar cells based on non-fullerene acceptors: Materials and device optimization

Ganesh D Sharma
The LNM Institute of Information Technology, India

Organic solar cells (OSCs) is an emerging solar power technology which embodies properties such as transparency, flexibility, and rapid, roll to roll manufacture, opening the potential for unique niche applications. The overall power conversion efficiency of OSCs depends on many factors, i.e. materials used on photoactive layer and its morphology, device architecture and electrodes. Among these one of the most important is the materials employed in the active layer and its light harvesting efficiency. Most of the active layer used in the OSCs is the bulk heterojunction (mixer of a donor and acceptor). In the past, most popular electron acceptors are based on fullerene derivatives, but due to their high cost and difficulty to tune the optical and electrochemical properties. At present, the non-fullerene acceptors are being used in the bulk heterojunction active layers along with either conjugated polymer or small molecule donor and the power conversion efficiency have been reached more than 14%, which is higher than that for fullerene based OSCs which opens an opportunity for the low cost high efficiency solar cells for the various applications, including transparent solar cells for building integrated photovoltaic technology and green houses for plant growth. This talk deals with the recent advances in the OSCs based on non-fullerene acceptors and device optimization and future scope of organic solar cells for commercialization