SILICON-BASED ELECTROACTIVE COMPOUNDS CONTAINING DIFFERENT DONOR MOIETIES AS POTENTIAL HOSTS FOR ORGANIC LIGHT EMITTING DIODES

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Phosphorescent organic light emitting diodes (PhOLEDs) and TADF based devices have attracted great attention. Their internal quantum efficiency can reach almost 100% [1]. Selection of the suitable host materials for PhOLEDs and TADF based devices is very important and several specifications should be met: a) triplet energy of a host has to be higher than that of emitter b) glass transition temperature of the host material has to be high [2], c) HOMO/LUMO energy levels of the host material and the emitter should be appropriate for the efficient energy transfer, d) host material has to have good charge transporting properties.

The optimized Buchwald-Hartwig reactions were carried out of the donors such as 10*H*-phenothiazine, 10*H*-phenoxazine, 3,7-di-*tert*-butyl-10*H*-phenothiazine and 9,9-dimethyl-9,10-dihydroacridine with bis(4-bromophenyl)(dimethyl)silane in the presence of $Pd(OAc)_2$, $P(t\text{-}Bu)_3$ and K_2CO_3 allowed us to obtain the target molecules (Fig. 1). The target compounds were characterized by UV-vis, fluorescence spectrometry, and cyclic voltammetry. Quantum chemical calculations of the derivatives were performed using DFT method. Hole-electron transporting properties of the layers of the target compounds were analysed using time-of-flight technique. The thermal stability was investigated by thermogravimetric analysis. The morphological transitions were studied by differential scanning calorimetry. The results will be reported in the presentation.

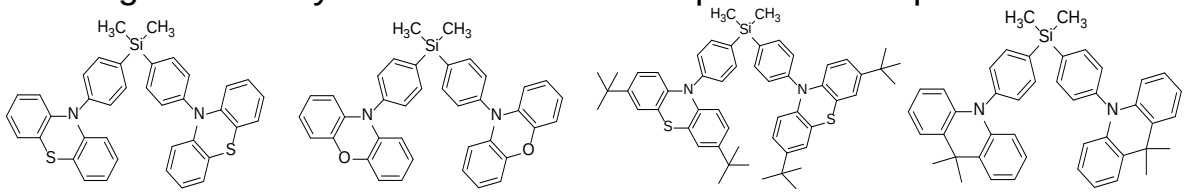

Figure 1. Molecular structures of the target compounds

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References

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