SYNTHESIS OF FUNCTIONALIZED MOLECULAR TRIPODS FOR SURFACE APPLICATIONS

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Controlling the interface between a solid-state substrate and the decorating molecular functionalized layers is of fundamental interest in nanotechnology [1]. Herein, we present the efficient synthesis of tripodal platforms for surface functionalization based on our previous work [2]. To control the spatial arrangement these rigid molecular tripods, based on triphenylmethane derivatives bear three thiol anchoring groups at the *meta*-position - relative to the sp^3-hybridized central carbon atom - to form upstanding and electronically optimized contacts to gold substrates (Figure 1). The freely rotating ethynyl joint opens the possibility to couple functional units via Sonogashira coupling.

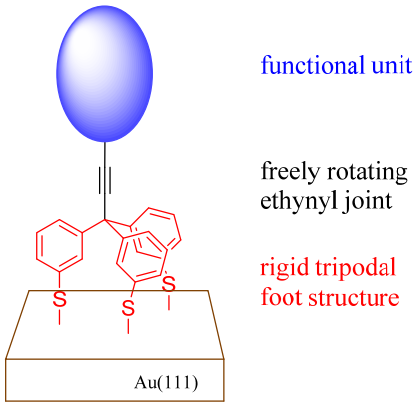

Figure 1. Rigid tripodal platform bearing three thiol anchoring groups, freely rotating ethynyl joint and the functional unit.

We will present tripods functionalized with light emitting units, which are decoupled from the surface and designed for the investigation of single molecule electroluminescence. Furthermore, we will show the synthesis of a dipolar rotator which is mounted on our platform to control the unidirectional motion of such molecular propeller on gold surfaces. Low temperature UHV-STM-studies of these molecules are currently under investigation.

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[1] Valášek, M.; Lindner, M.; Mayor, M. *Beilstein J. Nanotechnol.* **2016,** *7,* 374–40

[2] Lindner, M.; Valášek, M.; Homberg, J. *et al*. *Chem. Eur. J.* **2016**, *22*, 13218-13235.