# Synthesis of Substituted Tripod-Shaped Tri(*p*-phenylene)s

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For the development of organic thin films with applications in the construction of molecular scale devices it is needed *i)* the control of the orientation and spacing between functional groups in the film, *ii)* the availability of methods for the effective derivatization of the modified surface, and *iii)* for biological applications, the surface should resist the non-specific protein adsorption in order to avoid sensor contamination. [1]
We report here the synthesis of several tripod-shaped oligo(*p*-phenylene)s with each tripod leg composed of three or four phenylene units. Each leg is end-capped with an iodine atom, TMS or carboxyl group, and an ethoxy group is present at the functional arm. One of the tripods presents a methoxylated side substitution (Figure 1). The key step of the synthesis is the Pd-catalyzed Suzuki cross-coupling reaction[2] of the silicon derivative core molecule with the appropriate substituted *p*-biphenyl moiety. This synthesis represents a new and convergent strategy since iterative coupling of the substituted biphenyl buildings blocks with the first-generation tripods will allow the homologation of the tripod legs to reach giant tripod-shaped oligo(*p*-phenylene)s. Also, the iodine end-capped leg and the ethoxy group at the functional arm permit the design of the tripod for the nanostructuration of different surfaces and applications.[3] Geometry of some of the synthesized tripods was optimized by theoretical calculations (B3LYP/6-31G level of theory) combined with the analysis of their Raman bands.

**References:**

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**Figures 1**