

# Carbopalladation Cascades – Not only *syn*, but also *anti*

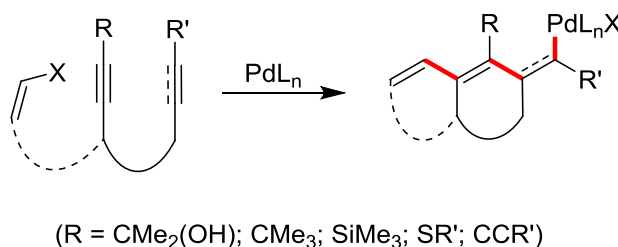
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A characteristic feature of carbopalladation reactions is the *syn*-attack of the organo-palladium species  $L_nX[Pd]-R$  on the reacting  $\pi$ -system.<sup>[1]</sup> Such a step results in compounds bearing Pd and R on the same side of the originating alkene moiety. Embedded into longer domino sequences complex structures are efficiently obtained by a repetition of this *syn*-carbopalladation step. In this way, linear oligoynes were cyclized in a dumbbell-mode and led to benzene-type structures or higher oligoynes.<sup>[1]</sup>

We exploited this chemistry to synthesize not only chromans, isochromans<sup>[2]</sup> and dibenzopentafulvalenes,<sup>[3]</sup> but also to access the most truncated  $\pi$ -helicenes which only consist of a *Z,Z,Z*,...-oligoene chain that is fixed in an all *s-cis* arrangement.<sup>[4]</sup> All these domino processes are based on a *syn*-carbopalladation cascade.

However, a carbopalladation cascade involving formal *anti*-carbopalladation steps opens new avenues to create compounds with tetrasubstituted double bonds (Scheme 1). Such a process was realized, and mechanistically and computationally investigated. The synthetic potential was demonstrated for the preparation of various oligocyclic frameworks (including natural products) by making use of a variety of different terminating processes.<sup>[5]</sup>



**Scheme 1.** Formal *anti*-carbopalladation reaction embedded in a domino cascade.

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