## Synthesis of cis,cis-1,2,3,4-tetrakis(diphenylphosphino)butadiene Exploiting the "Template Effect"

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In 1999 we reported the synthesis of cis,trans,cis-1,2,3,4-tetrakis(diphenylphosphino)cyclobutane, which was obtained by an intramolecular [2+2] photocycloaddition reaction.<sup>[1]</sup> A similar template effect has been exploit in a Pd(II) complex, promoting an asymmetric [4+2] Diels-Alder reaction.<sup>[2]</sup>

order synthesize In to cis,cis-1,2,3,4tetrakis(diphenylphosphino)butadiene (dppbd), a bis-bidentate tetraphosphine ligand with a conjugated backbone, we designed a synthesis, which comprises three steps. The first step is the synthesis of the mixed bridged Pt(II) compound [Pt<sub>2</sub>Cl<sub>2</sub>(dppa)(t-dppen)] containing trans-1,2-bis(diphenylphosphino)ethene (t-dppen) and bis(diphenylphosphino)acethylene (dppa). In the second step a [2+2] photocycloaddition reaction takes place, where a phosphine substituted cyclobutene is formed, which is not stable under these reaction conditions. A conrotatory ring opening of the cyclobutene leads to the formation of [Pt<sub>2</sub>Cl<sub>4</sub>(dppbd)]. Finally in the third step the free ligand is obtained by a cyanolysis reaction.

[1] Oberhauser W., Bachmann C., Stampfl T., Haid R., Langes C., Kopacka H., Rieder A., Brueggeller P., *Inorg. Chim. Acta*, 1999, **290**, 167. [2] Leung P.-H., Siah S.-Y., White A.J.P., Williams D.J., *J. Chem. Soc., Dalton Trans.*, 1998, 893.

Keywords: photochemistry coordination compounds, phosphorous compounds, platinum group