Chiral Phosphoric Acids

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Chiral phosphoric acid (CPA) catalysts represent a very important class of asymmetric organocatalyst that can efficiently catalyze various organic reactions under mild and environmentally friendly conditions.

Catalytic activity of the chiral phosphates is very much dependent on the acidity (pKa) and geometry of the phosphates. Strem Chemicals offers BINOL-, SPINOL-, and TADDOL derived CPA that can be applied as an effective tool for numerous enantioselective organic transformations. Some example are shown on Fig. 1

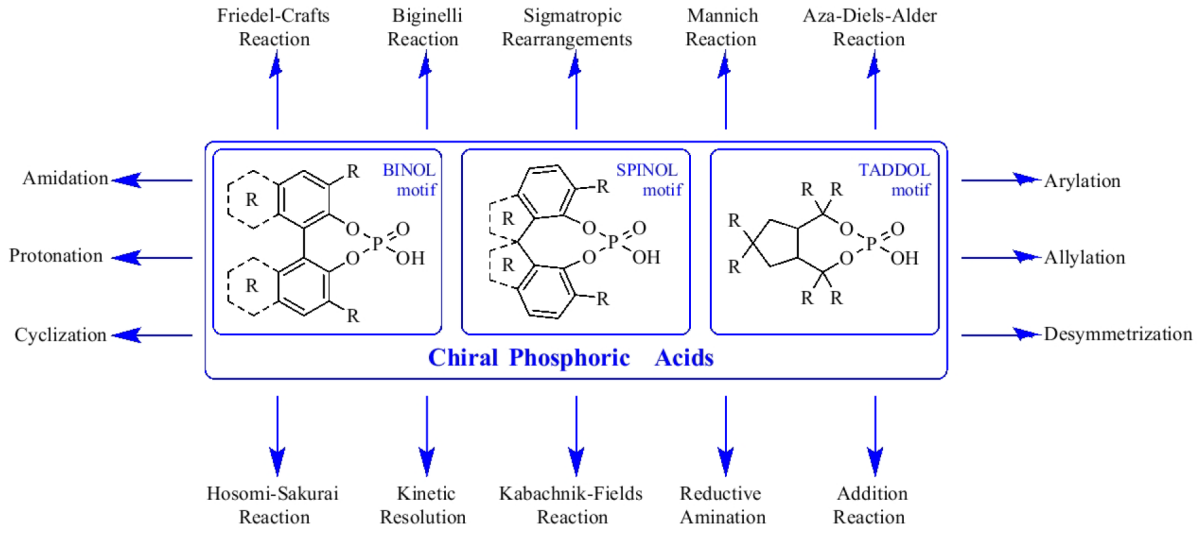

Fig. 1. Examples of chiral phosphoric acid promoted asymmetric synthesis

Chiral phosphoric acids (CPA) are frequently used as pure organocatalysts [5-7, 9-12], acting as Brønsted acids performing enantioselective synthesis of organic products that are widely used in biological and pharmaceutical chemistry [1]. On the other hand, CPA's are used in combination with transition metal complexes as well. In this case the metal interacts with the phosphate anion to form a transitional RO2POOMn+ complex (where RO2 is the chiral group) which acts as a Lewis acid catalyst [4]. In addition, the oxygen-double bonded to the phosphorus is able to donate a lone electron pair and act as a Lewis base [2-4].

It is not surprising that contributions dedicated to this topic have grown significantly over the last decade. A broad review can be found in many comprehensive articles [1-12], which describe all aspects of the asymmetric synthesis performed by CPA's in great detail.

References:

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11. *Chem. Soc. Rev.* **2020**, *49*, 286.
12. *Angew. Chem. Int. Ed.* **2020**, *59*, 10540.

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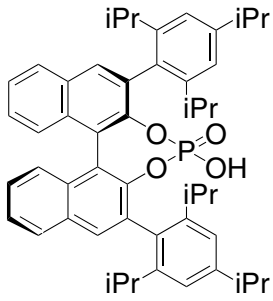

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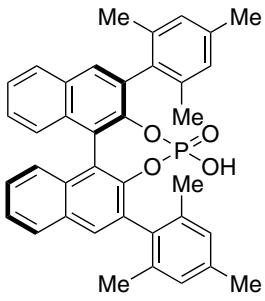

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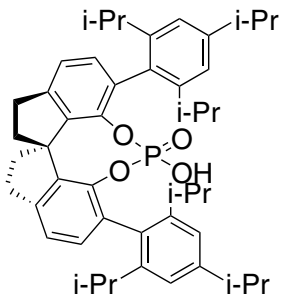

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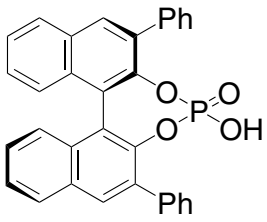

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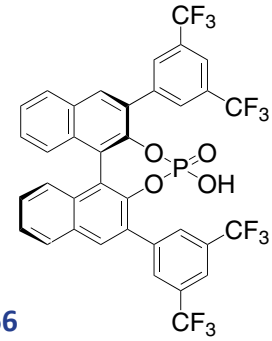

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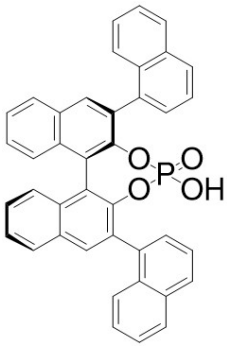

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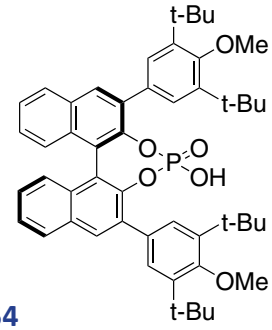

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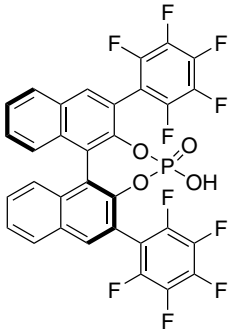

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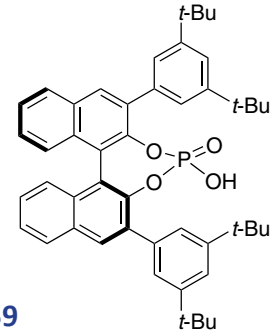

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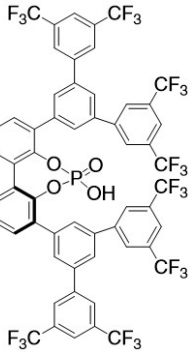

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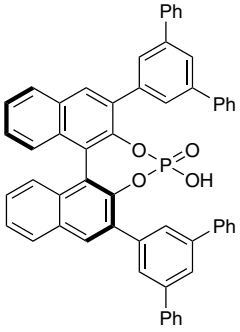

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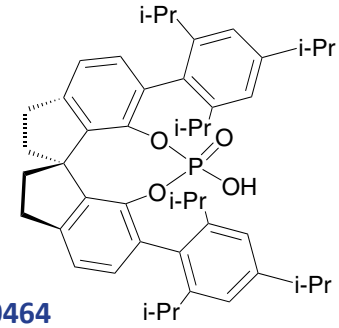

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