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Catalog # 07-0381 (11bS)-4,4-Dibutyl-2,6-bis(3,4,5-trifluorophenyl)-4,5-dihydro-3H-dinaphtho[2,1-c:1',2'-e]azepinium bromide

Note: Sold in collaboration with Nagase for research purposes only - US Patent 6,340,753.

Technical Notes:

- 2nd Generation Maruoka chiral phase transfer catalyst, for enantioselective alkylation of α-amino acid derivatives, that is easily recycled by extraction with fluorous solvent.
- 2. Catalyst for asymmetric conjugate addition of α -substituted- α -cyanoacetates to α,β -unsaturated acetylenic esters.
- 3. Phase transfer catalyzed enantioselective α -alkylation.
- 4. Asymmetric amination of β -keto esters.
- 5. Diastereo- and enantioselective conjugate addition of α-substituted nitroacetates to maleimides.
- 6. Efficient asymmetric synthesis of spiro-2(3H)-furanones via phase-transfer-catalyzed alkynylation.
- 7. Phase-transfer catalyzed asymmetric synthesis of α,β -unsaturated γ,γ -disubstituted γ -lactams.

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$$\begin{array}{c} \text{azepinium cmpd.} \\ 33\% \text{ aq. } \text{K}_2\text{CO}_3 \\ 40^\circ\text{C, 5 min.} \\ \\ \text{CO}_2^t\text{Bu} + \\ \text{RO}_2\text{C} \end{array} \\ \begin{array}{c} \text{Bn} \\ \text{V} \\ \text{COOR}_2 \end{array} \\ + \\ \text{O}_2\text{N} \\ \begin{array}{c} \text{R1} \\ \text{O}_2\text{N} \\ \text{COOR}_2 \end{array} \\ + \\ \text{O}_2\text{N} \\ \begin{array}{c} \text{Bn} \\ \text{V} \\ \text{O}_2\text{N} \\ \text{COOR}_2 \end{array} \\ \begin{array}{c} \text{Bn} \\ \text{V} \\ \text{O}_2\text{N} \\ \text{O}_2\text{N} \\ \text{COOR}_2 \end{array} \\ \begin{array}{c} \text{Bn} \\ \text{V} \\ \text{O}_2\text{N} \\ \text{O}_2\text{N} \\ \text{O}_2\text{N} \\ \text{O}_2\text{N} \end{array} \\ \begin{array}{c} \text{Bn} \\ \text{O}_2\text{N} \\ \text{R1} \\ \text{O}_2\text{N} \\ \text{R2} \end{array} \\ \begin{array}{c} \text{CO}_2^t\text{Bu} \\ \text{R2} \\ \text{OOC} \\ \text{R2} \\ \text{OOC} \\ \text{R2} \\ \text{R2} \end{array} \\ \begin{array}{c} \text{Bn} \\ \text{R2} \\ \text{OOC} \\ \text{R2} \\ \text{R2} \\ \text{R2} \end{array} \\ \begin{array}{c} \text{Tech Note (5)} \\ \text{Ref. (6)} \end{array} \\ \begin{array}{c} \text{Tech Note (6)} \\ \text{Ref. (7)} \\ \text{Ref. (7)} \end{array} \\ \begin{array}{c} \text{R2} \\ \text{OOC} \\ \text{Ref. (7)} \end{array} \\ \begin{array}{c} \text{R2} \\ \text{R2} \\ \text{R2} \\ \text{R2} \end{array} \\ \begin{array}{c} \text{R2} \\ \text{R2} \\ \text{R2} \\ \text{R2} \end{array} \\ \begin{array}{c} \text{R2} \\ \text{R2} \\ \text{R2} \\ \text{R2} \end{array} \\ \begin{array}{c} \text{R2} \\ \text{R2} \\ \text{R2} \\ \text{R2} \end{array} \\ \begin{array}{c} \text{R2} \\ \text{R2} \\ \text{R2} \\ \text{R2} \end{array} \\ \begin{array}{c} \text{R2} \\ \text{R2} \\ \text{R2} \\ \text{R2} \end{array} \\ \begin{array}{c} \text{R2} \\ \text{R2} \\ \text{R2} \\ \text{R2} \end{array} \\ \begin{array}{c} \text{R2} \\ \text{R2} \\ \text{R2} \end{array} \\ \begin{array}{c} \text{R2} \\ \text{R2} \\ \text{R2} \\ \text{R2} \end{array} \\ \begin{array}{c} \text{R2} \\ \text{R2} \\ \text{R2} \\ \text{R2} \\ \text{R2} \end{array} \\ \begin{array}{c} \text{R2} \\ \text{R2} \\ \text{R2} \\ \text{R2} \\ \text{R2} \\ \text{R2} \end{array} \\ \begin{array}{c} \text{R2} \\ \text{R3} \\ \text{R4} \\ \text{R$$

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