

A Supramolecular Introverted Bis-Au Cavitand and Its Catalytic Dimerization of Terminal Alkynes

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ABSTRACT TEXT (Arial, 12 font, left aligned, maximum 250 words)

A preparative synthesis of an inwardly oriented phosphoramidite-Au dinuclear cavitand complex is described, including a description of potent catalytic abilities. The cavitand structure was determined by crystallographic analysis, which revealed that phosphoramidite P-N bonds point outside placing the two Au atoms inside. In a similar vein, we prepared several kinds of supramolecular phosphorous cavitands that are phosphite-, and phosphinite-functionalized versions; these successfully coordinated with Au precursors to yield supramolecular “*introverted*” bis-Au cavitands. We explored the supramolecular catalytic-proclivity of the cavitands and found that they efficiently catalyze selective and direct dimerization of terminal alkynes to afford conjugated enynes in head-to-tailed fashion. Mixed dimerizations give rise to chemo-selective products, and macro-cyclization by intra-molecular dimerization are both trademark capabilities of the method.