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Special Issue: Gold Catalysis – New Perspectives for Homogeneous Catalysis

Editorial 481

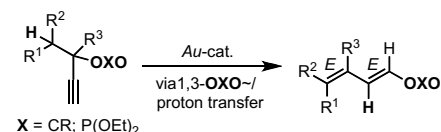
Communication

Alexander S. Dudnik, Todd Schwier, Vladimir Gevorgyan

J. Organomet. Chem. 694 (2009) 482

Gold(I)-catalyzed synthesis of (1*E*,3*E*)-dienes from propargylic esters

A mild and stereoselective gold(I)-catalyzed domino transformation of propargylic esters leading to substituted (1*E*,3*E*)-dienes has been developed. This cascade process proceeds via a sequence of 1,3-acyloxy- or 1,3-phosphatylxy migrations to form allenic intermediate followed by a proton transfer.



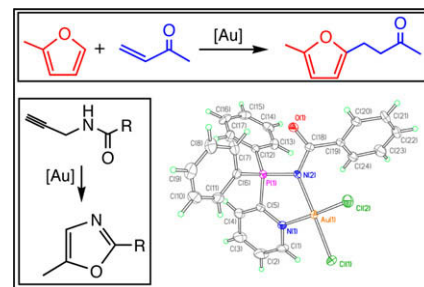
Regular Papers

David Aguilar, María Contel, Rafael Navarro, Tatiana Soler, Esteban P. Urriolabeitia

J. Organomet. Chem. 694 (2009) 486

Gold(III) iminophosphorane complexes as catalysts in C–C and C–O bond formations

The synthesis of gold complexes [AuCl₂(N,N-IM)]ClO₄ [N, N-IM = Ph₃P=NC₂H₅ (5), Ph₃P=NC(O)NC₅H₄ (6), Ph₂PyP=NPh (7) and Ph₂PyP=NC(O)Ph (8)], and the X-ray structure of (8) is reported. Complexes 5–8 catalyze the addition reactions of 2-methylfuran and azulene to methyl vinyl ketone, and also the synthesis of 2,5-disubstituted oxazoles from N-propargylcarboxamides.

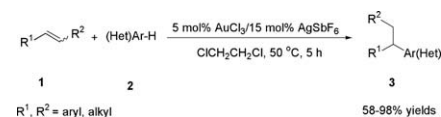


Ya-Ping Xiao, Xin-Yuan Liu, Chi-Ming Che

J. Organomet. Chem. 694 (2009) 494

Highly efficient gold(III)-catalyzed intermolecular hydroarylation of unactivated alkenes with arenes under mild conditions

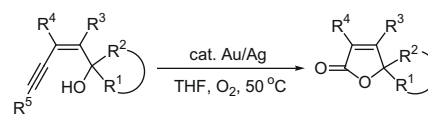
A simple and efficient method for functionalization of electron-rich arenes and heteroarenes with unactivated alkenes by Au(III)-catalyzed intermolecular hydroarylation under mild reaction conditions was developed. This method features a short reaction time (5 h) under mild conditions and has a broad substrate scope.



Feijie Song, Yuanhong Liu*J. Organomet. Chem.* 694 (2009) 502

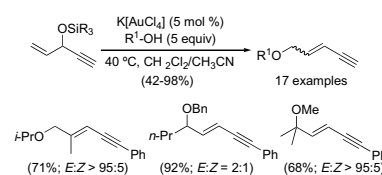
A facile approach to spirocyclic butenolides through cascade cyclization/oxidative cleavage reactions of (*Z*)-enynols catalyzed by gold under dioxygen atmosphere

A facile approach for the syntheses of spirocyclic butenolides through cascade cyclization/oxidative cleavage reactions of (*Z*)-enynols bearing cyclic substituents at the C-1 position catalyzed by gold under dioxygen atmosphere has been developed. A variety of substituted butenolides was constructed in a regioselective manner from suitably substituted (*Z*)-2-en-4-yn-1-ols.

**Timm T. Haug, Tobias Harschneck, Alexander Duschek, Chang-Uk Lee, Jörg T. Binder, Helge Menz, Stefan F. Kirsch***J. Organomet. Chem.* 694 (2009) 510

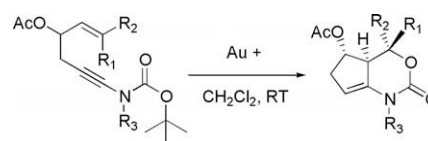
Reactivity of 3-silyloxy-1,4-enynes: Gold (III)-catalyzed regioselective nucleophilic substitution

Gold-catalyzed reactions of 3-silyloxy-1,4-enynes with alcohols afford primary, secondary, and tertiary pent-2-en-4-ynyl ethers in moderate to excellent yields. The substitution proceeds with high regioselectivity.

**Andrea Buzas, Florin Istrate, Xavier F. Le Goff, Yann Odabachian, Fabien Gagosz***J. Organomet. Chem.* 694 (2009) 515

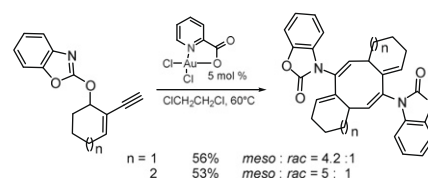
Gold(I)-catalyzed [4+2] cycloaddition of *N*-(hex-5-enynyl) *tert*-butyloxycarbamates

A study concerning the gold(I)-catalyzed transformation of *N*-(hex-5-enynyl) *tert*-butyloxycarbamates is described. The mild conditions employed allow the moderately efficient but stereoselective synthesis of a range of bicyclic carbamates following a formal [4+2] cycloaddition process.

**Xiaogen Huang, Liming Zhang***J. Organomet. Chem.* 694 (2009) 520

Unusual Au(III)-catalyzed dimerization of benzoxazol-2-yloxy enynes: Formation of substituted 1,5-cyclooctadienes

Symmetric 1,5-cyclooctadienes were formed via Au-catalyzed dimerization of benzoxazol-2-yloxy enynes, involving double nucleophilic attacks of alkenylgolds toward allylic cations.



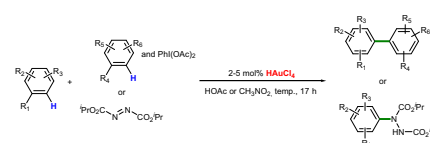
**Anirban Kar, Naveenkumar Mangu,
Hanns Martin Kaiser, Man Kin Tse**

J. Organomet. Chem. 694 (2009) 524

Gold-catalyzed direct oxidative coupling reactions of non-activated arenes

A general gold-catalyzed oxidative homo- and hetero-coupling of arenes in mild conditions is described. This reaction gives moderate to excellent yield using $\text{PhI}(\text{OAc})_2$ as an oxidant. The effects of

temperature, solvent, oxidant and concentration of substrate in this process have also been studied in details. The product identity and distribution as well as the substrate limitation give us insights into this type of gold catalysts. Depending upon the reaction conditions, gold catalyst behaves as a simple Lewis acid, which produces amines from arenes using DIAD as an aminating reagent.



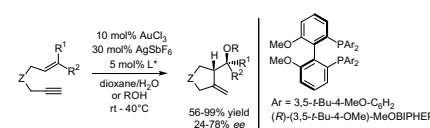
**Chung-Meng Chao, Emilie Genin,
Patrick Y. Toullec, Jean-Pierre Genêt,
Véronique Michelet**

J. Organomet. Chem. 694 (2009) 538

Towards asymmetric Au-catalyzed hydroxy- and alkoxy-cyclization of 1,6-enynes

The use of AuCl_3 associated with the chiral ligand (*R*)-4-MeO-3,5-(*t*-Bu)₂-MeOBIPHEP in the presence of silver salts was found to be efficient for the preparation of functionalized alcohols and ethers via

hydroxy- and alkoxy-cyclization reactions. The reaction conditions are compatible with carbon-, oxygen- and nitrogen-tethered enynes and afforded the corresponding carbocycles and heterocycles in good to excellent yield. The enantioselective version was optimized and led to moderate to good enantiomeric excesses. The nature of the catalytically active species of the gold-catalyzed reaction was investigated by ³¹P NMR analysis.

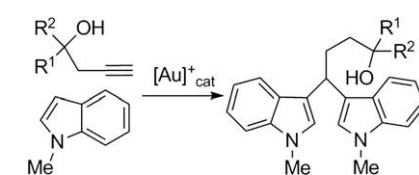


**José Barluenga, Amadeo Fernández,
Félix Rodríguez, Francisco J. Fañanás**

J. Organomet. Chem. 694 (2009) 546

Synthesis of bis(indolyl)alkanes by a site-selective gold-catalyzed addition of indoles to butynol derivatives

A new site-selective hydroarylation reaction of alkynes catalyzed by gold complexes and directed by an internal hydroxyl group has been developed and applied to the synthesis of bis(indolyl)alkanes.

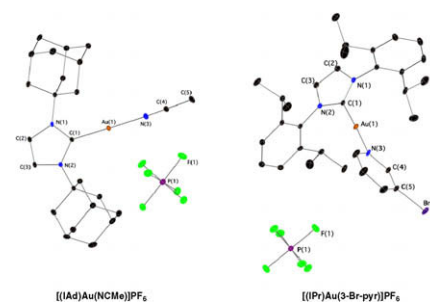


**Pierre de Frémont, Nicolas Marion,
Steven P. Nolan**

J. Organomet. Chem. 694 (2009) 551

Cationic NHC-gold(I) complexes: Synthesis, isolation, and catalytic activity

A series of cationic gold(I) complexes of formulae $[(\text{NHC})\text{Au}(\text{L})]\text{X}$, where $\text{L} = \text{MeCN}$, THF, nbd, pyr, 2-Br-pyr, 3-Br-pyr and $\text{X} = \text{BF}_4$, PF_6 , SbF_6 , FABA, has been synthesized, isolated and characterized. The catalytic activity of these complexes was then tested in the Overmann rearrangement.

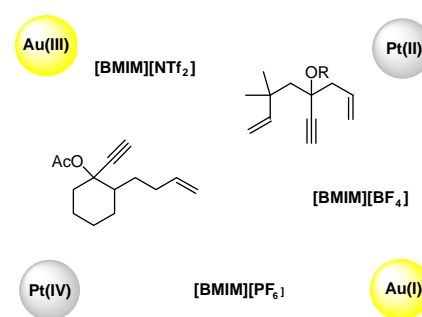


**Xavier Moreau, Alexandra Hours,
Louis Fensterbank,
Jean-Philippe Goddard, Max Malacria,
Serge Thorimbert**

J. Organomet. Chem. 694 (2009) 561

Use of ionic liquids in the platinum- and gold-catalyzed cycloisomerization of enyne systems

The platinum- and gold-catalyzed cycloisomerization of enyne systems has been carried out in various ionic liquids (ILs). In some cases, better selectivities and shorter reaction times have been observed.

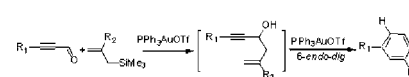


**Sabyasachi Bhunia,
Shariar Md. Abu Sohel, Chao-Chin Yang,
Shie-Fu Lush, Fwu-Ming Shen,
Rai-Shung Liu**

J. Organomet. Chem. 694 (2009) 566

Gold-catalyzed synthesis of 1,3-disubstituted benzenes through tandem allylation/cyclization reaction of alkynals

Treatment of alkynals with 2-substituted allylsilanes and $\text{PPh}_3\text{AuCl}/\text{AgOTf}$ (5/3 mol%) catalyst led to formation of 1,3-disubstituted benzenes efficiently. This reaction sequence comprises an initial allylation of aldehyde, followed by cycloisomerization of enynes; PPh_3AuOTf is active in both steps.

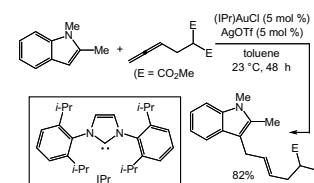


**Kristina L. Toups, Gordon T. Liu,
Ross A. Widenhoefer**

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Gold(I)-catalyzed hydroarylation of allenes with indoles

Reaction of monosubstituted, 1,3-disubstituted, or tetrasubstituted allenes with an indole in the presence of a catalytic 1:1 mixture of a gold(I) *N*-heterocyclic carbene complex and AgOTf at room temperature leads to hydroarylation with formation of 3-allyl-1,2-dimethylindoles in modest to good yield.

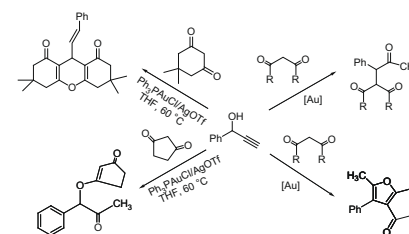


**Antonio Arcadi, Maria Alfonsi,
Marco Chiarini, Fabio Marinelli**

J. Organomet. Chem. 694 (2009) 576

Sequential gold-catalyzed reactions of 1-phenylprop-2-yn-1-ol with 1,3-dicarbonyl compounds

A variety of sequential gold-catalyzed reactions of 1-phenylprop-2-yn-1-ol with 1,3-dicarbonyl compounds are directed towards different outcomes.

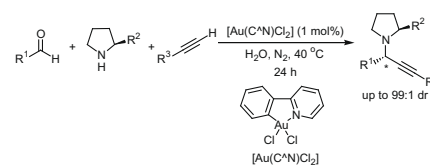


**Vanessa Kar-Yan Lo, Karen Ka-Yan Kung,
Man-Kin Wong, Chi-Ming Che**

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Gold(III) (C[^]N) complex-catalyzed synthesis of propargylamines via a three-component coupling reaction of aldehydes, amines and alkynes

A gold(III) (C[^]N) complex-catalyzed synthesis of propargylamines via a three-component coupling reaction of aldehydes, amines and alkynes with excellent diastereoselectivities (up to 99:1) and up to an overall turnover number of 812 in water at 40 °C was developed.



**A. Stephen K. Hashmi,
Tanuja Dondeti Ramamurthi,
Frank Rominger**

J. Organomet. Chem. 694 (2009) 592

Synthesis, structure and reactivity of organogold compounds of relevance to homogeneous gold catalysis

Elementary steps of gold(I) catalyzed reactions have been investigated. The reaction of organogold(I) phosphane complexes with halogen⁺ or protons proceeds diastereoselectively.

