Cluster
Modern Nickel-Catalyzed Reactions (Part II)

Editor: Ruben Martin, Guest Editor: Gary A. Molander

Experimental Electrochemical Potentials of Nickel Complexes
Q. Lin, G. Dawson, T. Diao
Catalytic Enantioselective Synthesis of Silicon-Stereogenic Alkoxy-silanes and Siloxanes

J. Zhu
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Recent Advances in Dimeric Cycloparaphenylenes as Nanotube Fragments

K. Li
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Illuminating a Path for Organic Synthesis Towards Sustainability. No One Said It Would Be Easy...

B. H. Lipshutz*
University of California, USA

Experimental Electrochemical Potentials of Nickel Complexes

Q. Lin
G. Dawson
T. Diao*
New York University, USA

Nickel-Catalyzed α-1,3-Dienylation of 1,3-Dicarbonyl Compounds with Propargylic Carbonates

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Ni(L){X}{m} Complexes
L = phosphine, pyridine, NHC, etc.

Ni(0) ⇌ Ni(I) ⇌ Ni(II) ⇌ Ni(III) ⇌ Ni(IV)

E (V vs Fe/Fe⁺)

R₁, R₂ = OMe, OEt, Me
R³ = Me, Et, Ph, OMe

7 examples
41–81% yield
Zn-Mediated Hydrodeoxygenation of Tertiary Alkyl Oxalates

Y. Ye
G. Ma
K. Yao
H. Gong*
Shanghai University, P. R. of China

60% yield, key intermediate to estrone

Nickel Hydride Catalyzed Cleavage of Allyl Ethers Induced by Isomerization

P. M. Kathe
A. Berkefeld*
I. Fleischer*
Eberhard Karls University Tübingen, Germany

 Allyl Protection

Nickel-Catalyzed Photodehalogenation of Aryl Bromides

B. Higginson
J. Sanjose-Orduna
Y. Gu
R. Martin*
Institute of Chemical Research of Catalonia (ICIQ), Spain

25 examples up to 90%
Nickel-Catalyzed Favorskii-Type Rearrangement of Cyclobutanone Oxime Esters to Cyclopropanecarbonitriles

B. Shuai
P. Fang*
T.-S. Mei*
Shanghai Institute of Organic Chemistry, P. R. of China

Nickel(Cl)glyme (10 mol%) dtbbpy (10 mol%) LiHMDS (2.0 equiv) DMF, rt, 12 h

26 examples up to 90% yield

LG = p-F3CC6H4CO2

Nickel-Catalyzed Oxidative Transamidation of Tertiary Aromatic Amines with N-Acylsaccharins

S. Liu
L. Yang
J. Tao
W. Yu
T. Wang*
J. Fu*
Jiangxi Normal University, P. R. of China

Selective cleavage of C(sp3)–N bonds

R = aryl, alkyl

R1, R2 = alkyl R2 ≥ R1

32 examples up to 83% yield

Nickel-Catalyzed Regiodivergent Reductive Hydroarylation of Styrenes

Y. Xue
J. Chen
P. Song
Y. He*
S. Zhu*
Nanjing University, P. R. of China

Ni-catalyzed regiodivergent output

L1

ligand A

anti-Markovnikov (enantioenriched)

ligand B

Markovnikov

enantioenriched

Ni-catalyzed reductive hydroarylation

regiodivergent switch

L2

A1

H

A2

Ar
Role of Benzylic Deprotonation in Nickel-Catalyzed Benzylic Dehydrogenation

P. Zhang
R. L. Cantrell
T. R. Newhouse*
Yale University, USA

Pre-equilibrium precedes dehydrogenation

Bathocuproine-Enabled Nickel-Catalyzed Selective Ullmann Cross-Coupling of Two $sp^2$-Hybridized Organohalides

Y. Li*
G. Yin*
Central South University, P. R. of China
Wuhan University, P. R. of China

Ligand-Enabled, Good to Excellent Cross-Selectivity
Mild Reaction Conditions, Remarkable Functional Group Tolerance

Ni-Catalyzed Intramolecular Reductive 1,2-Dicarbofunctionalization of Alkene: Facile Access to Podophyllum Lignans Core

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Y.-W. Wang
Z.-P. Qiu*
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Lanzhou University, P. R. of China

X$_1$, X$_2$ = I, Br
Ar = 3,4,5-(MeO)$_3$C$_6$H$_2$
**Nickel-Catalyzed N-Arylation of Amides with (Hetero)aryl Electrophiles by Using a DBU/NaTFA Dual-Base System**

T. Lundrigan, J. P. Tassone, M. Stradiotto*
Dalhousie University, Canada

![Chemical structure](image1)

**Nickel-Catalyzed Ligand-Free Hiyama Coupling of Aryl Bromides and Vinyltrimethoxysilane**

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![Chemical structure](image2)