Transition-Metal-Catalyzed Alkyl Heck-Type Reactions

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Alkyl Heck-Type Reactions

\[ \text{Alkyl} + M^{n+1}-X \rightarrow \text{Alkyl} \cdot M^{n+1}-X \rightarrow \text{Alkyl} \cdot M^{n+2}-X \rightarrow \text{Alkyl} + \text{Alkyl} \cdot M^{n+1}-X \]

1. Oxidative addition
2. Migratory insertion
3. β-H elimination

Sulfur Betaines from S-Propargyl Xanthates. Unusual Chemistry from a Simple Functional Group

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Laboratoire de Synthèse Organique associé au CNRS, Ecole Polytechnique, France

\[ \text{Alkylation Inversion of secondary alcohols} \]

\[ \text{Esters Alkenes Dienes and Diels–Alder cycloadditions Cyclopentenes} \]
Conformational Dynamics in Asymmetric Catalysis: Is Catalyst Flexibility a Design Element?

J. M. Crawford
M. S. Sigman*
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Rigidity is not a required design element for highly selective asymmetric catalysts

Synthesis of Bullvalenes: Classical Approaches and Recent Developments

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Universitat Rovira i Virgili, Spain

UV light

Cu(II) catalysis
Bullvalene

Co(II) catalysis

Au(I) catalysis

Transition-Metal-Catalyzed Alkenyl sp^2 C–H Activation: A Short Account

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Nanyang Technological University, Singapore
Nanjing Tech University, P. R. of China
University of Science and Technology of China, P. R. of China

M = Pd, Pt, Ru, Cu, etc.

(Stereoselective alkene synthesis)
(Atom economical)
(Versatile products)
(Synthesis of cyclic alkenes)
(Preparation of macrocycles)
Advancements in Visible-Light-Enabled Radical C(sp)2–H Alkylation of (Hetero)arenes

A. C. Sun
R. C. McAtee
E. J. McClain
C. R. J. Stephenson*
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Pyroles as Dienes in (4+3) Cycloadditions

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J. P. L. Ng
P. Chiu*
The University of Hong Kong, P. R. of China

Gold Vinlyldenes as Useful Intermediates in Synthetic Organic Chemistry

F. Gagosz*
University of Ottawa, Canada
Recent Advances in the Application of Ring-Closing Metathesis for the Synthesis of Unsaturated Nitrogen Heterocycles

E. J. Groso
C. S. Schindler*
University of Michigan, USA

Straightforward One-Pot Syntheses of Silylamides of Magnesium and Calcium via an In Situ Grignard Metalation Method

S. Kreck
P. Schüler
J. M. Peschel
M. Westerhausen*
Friedrich Schiller University Jena, Germany

Asymmetric Organocatalysis Revisited: Taming Hydrindanes with Jørgensen–Hayashi Catalyst

Y. Stöckl
W. Frey
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A. Baro
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A Scalable, One-Pot Synthesis of 1,2,3,4,5-Pentacarbomethoxycyclopentadiene

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C. C. Dudley
J. M. O’Leary
T. H. Lambert*
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General Synthetic Approach to Rotenoids via Stereospecific, Group-Selective 1,2-Rearrangement and Dual S_{N}Ar Cyclizations of Aryl Fluorides

S. Matsuoka
K. Nakamura
K. Ohmori*
K. Suzuki*
Tokyo Institute of Technology, Japan

Metal Enolates – Enamines – Enol Ethers: How Do Enolate Equivalents Differ in Nucleophilic Reactivity?

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D. S. Timofeeva
A. R. Ofial*
H. Mayr*
Ludwig-Maximilians-Universität München, Germany

• new one-pot procedure
• major improvement in ease of reaction and purification

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Bromine-Radical-Mediated Site-Selective Allylation of C(sp³)–H Bonds

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A. Maeda
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National Chiao Tung University, Taiwan

An Asymmetric Organocatalytic Aldol Reaction of a Hydrophobic Aldehyde in Aqueous Medium Running in Flow Mode

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S. Ratnam
Y. Yamashita
N. Adebar
M. Pieper
A. Berkessel
V. Hessel
H. Gröger*
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Oxidative Coupling of N-Methoxyamides and Related Compounds toward Aromatic Hydrocarbons by Designer μ-Oxo Hypervalent Iodine Catalyst

T. Dohi*
H. Sasa
M. Dochi
C. Yasui
Y. Kita*
Ritsumeikan University, Japan
GlucoSiFA and LactoSiFA: New Types of Carbohydrate-Tagged Silicon-Based Fluoride Acceptors for 18F-Positron Emission Tomography (PET)

A. Wiegand
V. Wiese
B. Glowacki
L. Iovkova
R. Schirrmacher*
K. Jurkschat*
N. Krause*
Technische Universität Dortmund, Germany
University of Alberta, Canada

Alkali Metal Effects in Trans-Metal-Trapping (TMT): Comparing LiTMP with NaTMP in Cooperative MTMP/Ga(CH₂SiMe₃)₃ Metalation Reactions

R. McLellan
M. Uzelac
L. J. Bole
J. M. Gil-Negrete
D. R. Armstrong
A. R. Kennedy
R. E. Mulvey*
E. Hevia*
University of Strathclyde, UK

Complementary Reactivity of 1,6-Enynes with All-Metal Aromatic Tri-nuclear Complexes and Carboxylic Acids

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M. Lanzi
G. Cera
M. Malacria*
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UPMC Sorbonne Université, IPCM (UMR CNRS 8232), France
Copper-Catalysed Hydroamination of N-Allenylsulfonamides: The Key Role of Ancillary Coordinating Groups

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L. A. Perego*
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L. Grimaud*
M. Taillefer*
F. Monnier*

Institut Charles Gerhardt Montpellier UMR 5253 CNRS, AM2N, France
Chimie ParisTech, France
PSL University, Sorbonne Université, France
Institut Universitaire de France, IUF, France

Unsaturated moieties enhancing substrate-catalyst binding

- Regio- and stereoselective
- Mild conditions, room temperature
- Up to 90% yield
- Mechanistic studies

Synthesis of 2-Azidomethyl-5-ethynylfuran: A New Bio-Derived Self-Clickable Building Block

B. Ya. Karlinskii
L. V. Romashov
K. I. Galkin
P. G. Kislitsyn
V. P. Ananikov*

N. D. Zelinsky Institute of Organic Chemistry of the Russian Academy of Sciences, Russian Federation

Self-clickable building block suitable for intermolecular cycloaddition

Visible Light-Promoted Formation of C–B and C–S Bonds under Metal- and Photocatalyst-Free Conditions

L. Blank
M. Fagnoni
S. Protti
M. Rueping*

RWTH Aachen University, Germany

- no photocatalyst
- visible-light-promoted
- metal- and additive-free
**Lewis Acid Promoted Trapping of Chiral Aza-enolates**

F. Lanza  
J. M. Pérez  
R. P. Jumde  
S. R. Harutyunyan*

Rijksuniversiteit Groningen, The Netherlands

Electrophile: $\alpha,\beta$-unsaturated esters, ketones

One-pot reaction  
3 chiral centers, dr up to 6:1

**Organocatalytic Desymmetrisation of Fittig’s Lactones: Deuteration as a Reporter Tag for Hidden Racemisation**

P. Spránitz  
P. Sóregi  
B. B. Botlik  
M. Berta  
T. Soós*

Institute of Organic Chemistry, Research Centre for Natural Sciences, Hungary

15 examples  
up to 85% yield  
up to 93% ee

**Synthesis and Evaluation of Cyclic Acetals of Serine Hydroxylamine for Amide-Forming KAHA Ligations**

S. Baldauf  
J. W. Bode*

ETH Zürich, Switzerland
Visible-Light-Induced Decarboxylative C–H Adamantylation of Azoles at Ambient Temperature

X = S, O, NR',
R = Me, OMe, CF₃, F, Cl, Br, CO₂Et

19 examples

up to 80% yield

λ_{max} = 458 nm

- C–H Adamantylation
- Visible-light-promoted decarboxylation
- No stoichiometric oxidants
- No expensive Ir or Ru photocatalysts
- Ambient reaction temperature