

PH
A 47/cs

May 1, 2013
Volume 135
Number 17
pubs.acs.org/JACS

J | A | C | S

JOURNAL OF THE AMERICAN CHEMICAL SOCIETY

The cover features several molecular models of complex structures, likely metal-organic frameworks or catalytic complexes, rendered in ball-and-stick format with various colored atoms (black, red, yellow, purple, grey). A hand is shown holding a globe of the Earth in the background. Text elements include "Save the Earth", "Growing World Population", "Energy Consumption", "Petroleum-based Fuels", "Metal-Oxygen Chemistry", and "Green Oxidation & Green Energy Production". At the bottom, a chemical reaction scheme is presented:

$$\text{O}_2 + 4\text{e}^- + 4\text{H}^+ \xrightleftharpoons[\text{Photosynthesis}]{\text{Respiration}} 2\text{H}_2\text{O}$$

The energy change for this reaction is given as 237 kJ mol^{-1} . To the right of the reaction, a chemical transformation is shown: $\text{RH} + \text{H}_2\text{O}_2 \rightarrow \text{ROH} + \text{H}_2\text{O}$, with a blue arrow pointing from the reaction to the right.

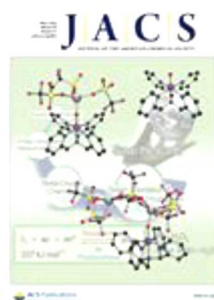


ACS Publications
MOST TRUSTED. MOST CITED. MOST READ.

www.acs.org

J | A | C | S

JOURNAL OF THE AMERICAN CHEMICAL SOCIETY



Larger Cover

May 1, 2013

Volume 135, Issue 17

Pages 6379-6722

Order Print Issue

SPOTLIGHTS

Spotlights on Recent *JACS* Publications

pp 6379-6379

Publication Date (Web): April 23, 2013 (Spotlights)

DOI: 10.1021/ja403997e

COMMUNICATIONS

Redox-Linked Changes to the Hydrogen-Bonding Network of Ribonucleotide Reductase β 2

Adam R. Offenbacher, Ellen C. Minnihan, JoAnne Stubbe, and Bridgette A. Barry

pp 6380-6383

Publication Date (Web): April 17, 2013 (Communication)

DOI: 10.1021/ja3032949

 **Section:**

Enzymes

Tolerance of Base Pair Size and Shape in Postlesion DNA Synthesis

Hailey L. Gahlon, W. Bernd Schweizer, and Shana J. Sturla

pp 6384-6387

Publication Date (Web): April 5, 2013 (Communication)

DOI: 10.1021/ja311434s

 **Section:**

Biochemical Genetics

A Mononuclear Non-Heme Manganese(IV)–Oxo Complex Binding Redox-Inactive Metal Ions

Junying Chen, Yong-Min Lee, Katherine M. Davis, Xiujuan Wu, Mi Sook Seo, Kyung-Bin Cho, Heejung Yoon, Young Jun Park, Shunichi Fukuzumi, Yulia N. Pushkar, and Wonwoo Nam

pp 6388-6391

Publication Date (Web): January 16, 2013 (Communication)

DOI: 10.1021/ja312113p

 **Section:**

Inorganic Chemicals and Reactions

Controlled pH Stability and Adjustable Cellular Uptake of Mixed-Charge Nanoparticles

Pramod P. Pillai, Sabil Huda, Bartłomiej Kowalczyk, and Bartosz A. Grzybowski

pp 6392-6395

Publication Date (Web): March 26, 2013 (Communication)

DOI: 10.1021/ja4001272

Section:

Pharmaceuticals

A CatalyCEST MRI Contrast Agent That Detects the Enzyme-Catalyzed Creation of a Covalent Bond

Dina V. Hingorani, Edward A. Randtke, and Mark D. Pagel
pp 6396-6398

Publication Date (Web): April 19, 2013 (Communication)

DOI: 10.1021/ja400254e

Section:

Enzymes

A Switchable Surface Enables Visualization of Single DNA Hybridization Events with Atomic Force Microscopy

Gary R. Abel, Jr., Eric A. Josephs, Norman Luong, and Tao Ye
pp 6399-6402

Publication Date (Web): April 5, 2013 (Communication)

DOI: 10.1021/ja401036t

Section:

Biochemical Methods

Intermediate-Range Structure of Self-Assembled Cobalt-Based Oxygen-Evolving Catalyst

Christopher L. Farrow, D. Kwabena Bediako, Yogesh Surendranath, Daniel G. Nocera, and Simon J. L. Billinge
pp 6403-6406

Publication Date (Web): April 2, 2013 (Communication)

DOI: 10.1021/ja401276f

Section:

Electrochemistry

Metastable Liquid Crystal as Time-Responsive Reaction Medium: Aging-Induced Dual Enantioselective Control

Yasuhiro Ishida, Yuki Matsuoka, Yukiko Kai, Kuniyo Yamada, Kenta Nakagawa, Toru Asahi, and Kazuhiko Saigo
pp 6407-6410

Publication Date (Web): April 19, 2013 (Communication)

DOI: 10.1021/ja4016556

 Section:

Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes

Tunable Anisotropic Thermal Expansion of a Porous Zinc(II) Metal–Organic Framework

Ilne Grobler, Vincent J. Smith, Prashant M. Bhatt, Simon A. Herbert, and
Leonard J. Barbour

pp 6411-6414

Publication Date (Web): April 12, 2013 (Communication)

DOI: 10.1021/ja401671p

 Section:

Surface Chemistry and Colloids

Chemoselective Metal-Free Aerobic Alcohol Oxidation in Lignin

Alireza Rahimi, Ali Azarpira, Hoon Kim, John Ralph, and Shannon S. Stahl
pp 6415-6418

Publication Date (Web): April 9, 2013 (Communication)

DOI: 10.1021/ja401793n

 Section:

Cellulose, Lignin, Paper, and Other Wood Products

Catalytic, Enantioselective, Intramolecular Carbosulfenylation of Olefins

Scott E. Denmark and Alex Jaunet

pp 6419-6422

Publication Date (Web): April 19, 2013 (Communication)

DOI: 10.1021/ja401867b

 Section:

Benzene, Its Derivatives, and Condensed Benzenoid Compounds

Direct Measurement of Sequential Folding Pathway and Energy Landscape of Human Telomeric G-quadruplex Structures

Wei Li, Xi-Miao Hou, Peng-Ye Wang, Xu-Guang Xi, and Ming Li

pp 6423-6426

Publication Date (Web): April 17, 2013 (Communication)

DOI: 10.1021/ja4019176

 Section:

General Biochemistry

Mechanistic Study of the Oxidative Coupling of Styrene with 2-Phenylpyridine Derivatives Catalyzed by Cationic Rhodium(III) via C–H Activation

Mikaël Brasse, Juan Cámpora, Jonathan A. Ellman, and Robert G. Bergman
pp 6427-6430

Publication Date (Web): April 5, 2013 (Communication)

DOI: 10.1021/ja401561q

 Section:

Organometallic and Organometalloidal Compounds

Fractal Etching of Graphene

Dechao Geng, Bin Wu, Yunlong Guo, Birong Luo, Yunzhou Xue, Jianyi Chen, Gui Yu, and Yunqi Liu
pp 6431-6434

Publication Date (Web): April 16, 2013 (Communication)

DOI: 10.1021/ja402224h

 Section:

Ceramics

Geminal Tetrauration of Acetonitrile: Hemilabile-Phosphine-Stabilized Au₈Ag₄ Cluster Compounds

Xiao-Li Pei, Yang Yang, Zhen Lei, and Quan-Ming Wang
pp 6435-6437

Publication Date (Web): April 12, 2013 (Communication)

DOI: 10.1021/ja402352c

 Section:

Organometallic and Organometalloidal Compounds

Rate-Determining Water-Assisted O–O Bond Cleavage of an Fe^{III}-OOH Intermediate in a Bio-inspired Nonheme Iron-Catalyzed Oxidation

Williamson N. Oloo, Andrew J. Fielding, and Lawrence Que, Jr.
pp 6438-6441

Publication Date (Web): April 17, 2013 (Communication)

DOI: 10.1021/ja402759c

 **Section:**

Physical Organic Chemistry

Nine-Step Enantioselective Total Synthesis of (–)-Vincorine

Benjamin D. Horning and David W. C. MacMillan

pp 6442-6445

Publication Date (Web): April 15, 2013 (Communication)

DOI: 10.1021/ja402933s

 **Section:**

Alkaloids

C–H Bond Activation by Radical Ion Pairs Derived from $R_3P/Al(C_6F_5)_3$ Frustrated Lewis Pairs and N_2O

Gabriel Ménard, Jillian A. Hatnean, Hugh J. Cowley, Alan J. Lough, Jeremy M. Rawson, and Douglas W. Stephan

pp 6446-6449

Publication Date (Web): April 17, 2013 (Communication)

DOI: 10.1021/ja402964h

 **Section:**

Organometallic and Organometalloidal Compounds

ARTICLES

A Synthetic Receptor for Asymmetric Dimethyl Arginine

Lindsey I. James, Joshua E. Beaver, Natalie W. Rice, and Marcey L. Waters
pp 6450-6455

Publication Date (Web): April 5, 2013 (Article)

DOI: 10.1021/ja307907p

 **Section:**

General Biochemistry

A Mechanistic Model for Amorphous Protein Aggregation of Immunoglobulin-like Domains

Madeleine B. Borgia, Adrian A. Nickson, Jane Clarke, and Michael J. Hounslow

pp 6456-6464

Publication Date (Web): March 19, 2013 (Article)

DOI: 10.1021/ja308852b

 **Section:**

Immunochemistry

Reactions of a Cationic Geminal Zr⁺/P Pair with Small Molecules

Xin Xu, Gerald Kehr, Constantin G. Daniliuc, and Gerhard Erker
pp 6465-6476

Publication Date (Web): March 25, 2013 (Article)

DOI: 10.1021/ja3110076

 **Section:**

Organometallic and Organometalloidal Compounds

A (3 + 3)-Dimensional “Hypercubic” Oxide-Ionic Conductor: Type II Bi₂O₃–Nb₂O₅

Chris D. Ling, Siegbert Schmid, Peter E. R. Blanchard, Vaclav Petříček, Garry J. McIntyre, Neeraj Sharma, Andrey Maljuk, Aleksey A. Yaremchenko, Vladislav V. Kharton, Matthias Gutmann, and Ray L. Withers
pp 6477-6484

Publication Date (Web): April 9, 2013 (Article)

DOI: 10.1021/ja3109328

 **Section:**

Electric Phenomena

On the Influence of Water on the Electronic Structure of Firefly Oxyluciferin Anions from Absorption Spectroscopy of Bare and Monohydrated Ions in Vacuo

Kristian Støchkel, Christian Nygaard Hansen, Jørgen Houmøller, Lisbeth Munksgaard Nielsen, Kelvin Anggara, Mathieu Linares, Patrick Norman, Fernando Nogueira, Oleg V. Maltsev, Lukas Hintermann, Steen Brøndsted Nielsen, Panče Naumov, and Bruce F. Milne

pp 6485-6493

Publication Date (Web): April 4, 2013 (Article)

DOI: 10.1021/ja311400t

 Section:

General Biochemistry

Rattle-Structured Multifunctional Nanotheranostics for Synergetic Chemo-/Radiotherapy and Simultaneous Magnetic/Luminescent Dual-Mode Imaging

Wenpei Fan, Bo Shen, Wenbo Bu, Feng Chen, Kuaile Zhao, Shengjian Zhang, Liangping Zhou, Weijun Peng, Qingfeng Xiao, Huaiyong Xing, Jianan Liu, Dalong Ni, Qianjun He, and Jianlin Shi

pp 6494-6503

Publication Date (Web): April 10, 2013 (Article)

DOI: 10.1021/ja312225b

 Section:

Pharmaceuticals

Epitope-distal Effects Accompany the Binding of Two Distinct Antibodies to Hepatitis B Virus Capsids

Jessica Z. Bereszczyk, Rebecca J. Rose, Esther van Duijn, Norman R. Watts, Paul T. Wingfield, Alasdair C. Steven, and Albert J. R. Heck

pp 6504-6512

Publication Date (Web): April 5, 2013 (Article)

DOI: 10.1021/ja402023x

 Section:

Immunochemistry

Enhanced Catalytic Four-Electron Dioxygen (O₂) and Two-Electron Hydrogen Peroxide (H₂O₂) Reduction with a Copper(II) Complex Possessing a Pendant Ligand Pivalamido Group

Saya Kakuda, Ryan L. Peterson, Kei Ohkubo, Kenneth D. Karlin, and Shunichi Fukuzumi

pp 6513-6522

Publication Date (Web): March 20, 2013 (Article)

DOI: 10.1021/ja3125977

Section:

Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms

Free-Standing, Single-Monomer-Thick Two-Dimensional Polymers through Covalent Self-Assembly in Solution

Kangkyun Baek, Gyeongwon Yun, Youngkook Kim, Dongwoo Kim, Raghunandan Hota, Ilha Hwang, Dan Xu, Young Ho Ko, Gil Ho Gu, Ju Hyung Suh, Chan Gyung Park, Bong June Sung, and Kimoon Kim

pp 6523-6528

Publication Date (Web): April 10, 2013 (Article)

DOI: 10.1021/ja4002019

Section:

Chemistry of Synthetic High Polymers

Labeling Proteins with Fluorophore/Thioamide Förster Resonant Energy Transfer Pairs by Combining Unnatural Amino Acid Mutagenesis and Native Chemical Ligation

Rebecca F. Wissner, Solongo Batjargal, Colin M. Fadzen, and E. James Petersson

pp 6529-6540

Publication Date (Web): April 17, 2013 (Article)

DOI: 10.1021/ja4005943

Section:

Biochemical Methods

Differential Role of the Protein Matrix on the Binding of a Catalytic Aspartate to Mg²⁺ vs Ca²⁺: Application to Ribonuclease H

C. Satheesan Babu, Todor Dudev, and Carmay Lim

pp 6541-6548

Publication Date (Web): April 11, 2013 (Article)

DOI: 10.1021/ja4006095

 **Section:**

Enzymes

Supramolecular Autoregulation

Francisco Rodríguez-Llansola and E. W. Meijer

pp 6549-6553

Publication Date (Web): April 2, 2013 (Article)

DOI: 10.1021/ja4006833

 **Section:**

Enzymes

A Selective Blocking Method To Control the Overgrowth of Pt on Au Nanorods

John Fennell, Dongsheng He, Anicetus Muche Tanyi, Andrew J. Logsdail, Roy L. Johnston, Z. Y. Li, and Sarah L. Horswell

pp 6554-6561

Publication Date (Web): April 17, 2013 (Article)

DOI: 10.1021/ja4003475

 **Section:**

Electrochemistry

Bicyclic Peptide Ligands Pulled out of Cysteine-Rich Peptide Libraries

Shiyu Chen, Inmaculada Rentero Rebollo, Sergey A. Buth, Julia Morales-Sanfrutos, Jeremy Touati, Petr G. Leiman, and Christian Heinis

pp 6562-6569

Publication Date (Web): April 5, 2013 (Article)

DOI: 10.1021/ja400461h

 **Section:**

Biochemical Methods

3-Trimethylsilylcyclobutylidene. The γ -Effect of Silicon on Carbenes

Xavier Creary

pp 6570-6578

Publication Date (Web): March 25, 2013 (Article)

DOI: 10.1021/ja400747u

 Section:

Organometallic and Organometalloidal Compounds

Electrophilicities of Benzaldehyde-Derived Iminium Ions: Quantification of the Electrophilic Activation of Aldehydes by Iminium Formation

Roland Appel, Saloua Chelli, Takahiro Tokuyasu, Konstantin Troshin, and Herbert Mayr

pp 6579-6587

Publication Date (Web): April 9, 2013 (Article)

DOI: 10.1021/ja401106x

 Section:

Physical Organic Chemistry

Mechanism and Origins of Selectivity in Ru(II)-Catalyzed Intramolecular (5+2) Cycloadditions and Ene Reactions of Vinylcyclopropanes and Alkynes from Density Functional Theory

Xin Hong, Barry M. Trost, and K. N. Houk

pp 6588-6600

Publication Date (Web): April 9, 2013 (Article)

DOI: 10.1021/ja4012657

 Section:

Physical Organic Chemistry

Synthesis, Electrochemistry, and Photophysics of a Family of Phlorin Macrocycles That Display Cooperative Fluoride Binding

Allen J. Pistner, Daniel A. Lutterman, Michael J. Ghidui, Ying-Zhong Ma, and Joel Rosenthal

pp 6601-6607

Publication Date (Web): April 17, 2013 (Article)

DOI: 10.1021/ja401391z

 Section:

Biomolecules and Their Synthetic Analogs

A Facile Strategy To Design Zeolite L Crystals with Tunable Morphology and Surface Architecture

Alexandra I. Lupulescu, Manjesh Kumar, and Jeffrey D. Rimer

pp 6608-6617

Publication Date (Web): April 9, 2013 (Article)

DOI: 10.1021/ja4015277

Section:

Crystallography and Liquid Crystals

A Detailed Study of Acetate-Assisted C–H Activation at Palladium(IV) Centers

Ansis Maleckis, Jeff W. Kampf, and Melanie S. Sanford

pp 6618-6625

Publication Date (Web): April 19, 2013 (Article)

DOI: 10.1021/ja401557m

Section:

Physical Organic Chemistry

Photoinduced and Thermal Denitrogenation of Bulky Triazoline Crystals: Insights into Solid-to-Solid Transformation

Denisse de Loera, Antoine Stopin, and Miguel A. Garcia-Garibay

pp 6626-6632

Publication Date (Web): April 2, 2013 (Article)

DOI: 10.1021/ja401577p

Section:

Physical Organic Chemistry

Mechanism of Alkoxy Groups Substitution by Grignard Reagents on Aromatic Rings and Experimental Verification of Theoretical Predictions of Anomalous Reactions

Gonzalo Jiménez-Osés, Anthony J. Brockway, Jared T. Shaw, and K. N. Houk

pp 6633-6642

Publication Date (Web): March 26, 2013 (Article)

DOI: 10.1021/ja4015937

Section:

Physical Organic Chemistry

Permanent Fixing or Reversible Trapping and Release of DNA Micropatterns on a Gold Nanostructure Using Continuous-Wave or Femtosecond-Pulsed Near-Infrared Laser Light

Tatsuya Shoji, Junki Saitoh, Noboru Kitamura, Fumika Nagasawa, Kei Murakoshi, Hiroaki Yamauchi, Syoji Ito, Hiroshi Miyasaka, Hajime Ishihara, and Yasuyuki Tsuboi

pp 6643-6648

Publication Date (Web): April 15, 2013 (Article)

DOI: 10.1021/ja401657j

 Section:

Biochemical Methods

Striped, Ellipsoidal Particles by Controlled Assembly of Diblock Copolymers

Se Gyu Jang, Debra J. Audus, Daniel Klinger, Daniel V. Krogstad, Bumjoon J. Kim, Alexandre Cameron, Sang-Woo Kim, Kris T. Delaney, Su-Mi Hur, Kato L. Killops, Glenn H. Fredrickson, Edward J. Kramer, and Craig J. Hawker

pp 6649-6657

Publication Date (Web): April 17, 2013 (Article)

DOI: 10.1021/ja4019447

 Section:

Physical Properties of Synthetic High Polymers

Theoretical Exploration of the Mechanism of Riboflavin Formation from 6,7-Dimethyl-8-ribityllumazine: Nucleophilic Catalysis, Hydride Transfer, Hydrogen Atom Transfer, or Nucleophilic Addition?

Martin Breugst, Albert Eschenmoser, and K. N. Houk

pp 6658-6668

Publication Date (Web): April 3, 2013 (Article)

DOI: 10.1021/ja402099f

 Section:

Physical Organic Chemistry

Seed-Mediated Growth of Shape-Controlled Wurtzite CdSe Nanocrystals: Platelets, Cubes, and Rods

Katherine P. Rice, Aaron E. Saunders, and Mark P. Stoykovich
pp 6669-6676

Publication Date (Web): April 1, 2013 (Article)

DOI: 10.1021/ja402240m

 Section:

Surface Chemistry and Colloids

The Cinchona Primary Amine-Catalyzed Asymmetric Epoxidation and Hydroperoxidation of α,β -Unsaturated Carbonyl Compounds with Hydrogen Peroxide

Olga Lifchits, Manuel Mahlau, Corinna M. Reisinger, Anna Lee, Christophe Farès, Iakov Polyak, Gopinadhanpillai Gopakumar, Walter Thiel, and Benjamin List

pp 6677-6693

Publication Date (Web): April 18, 2013 (Article)

DOI: 10.1021/ja402058v

 Section:

Physical Organic Chemistry

Photophysical Properties of Self-Assembled Multinuclear Platinum Metallacycles with Different Conformational Geometries

Jun-Sheng Chen, Guang-Jiu Zhao, Timothy R. Cook, Ke-Li Han, and Peter J. Stang

pp 6694-6702

Publication Date (Web): April 7, 2013 (Article)

DOI: 10.1021/ja402421w

 Section:

Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes

Electron-Rich N-Heterocyclic Silylene (NHSi)–Iron Complexes: Synthesis, Structures, and Catalytic Ability of an Isolable Hydridosilylene–Iron Complex

Burgert Blom, Stephan Enthaler, Shigeyoshi Inoue, Elisabeth Irran, and Matthias Driess

pp 6703-6713

Publication Date (Web): April 9, 2013 (Article)

DOI: 10.1021/ja402480v

 **Section:**

Inorganic Chemicals and Reactions

The Role of Arene–Arene Interactions in the Folding of *ortho*-Phenylenes

Sanyo M. Mathew, James T. Engle, Christopher J. Ziegler, and C. Scott Hartley

pp 6714-6722

Publication Date (Web): April 4, 2013 (Article)

DOI: 10.1021/ja4026006