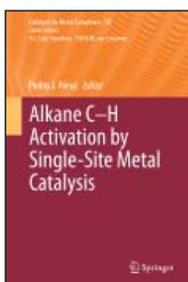


Publications in Brief

BOOKS

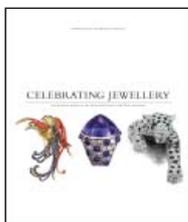
“Alkane C–H Activation by Single-Site Metal Catalysis”



Edited by P. J. Pérez (Laboratorio de Catálisis Homogénea, Departamento de Química y Ciencia de los Materiales, Unidad Asociada al CSIC, Centro de Investigación en Química Sostenible, Universidad de Huelva, Spain), Series: Catalysis by Metal Complexes, Vol. 38, Springer Science+Business Media, Dordrecht, The Netherlands, 2012, 272 pages, ISBN: 978-90-481-3697-1, €90.00, €106.95, US\$129.00

Over the past decade, much research has been devoted to new reagents and catalysts, including those involving pgms, that can influence carbon–hydrogen bond activation, mainly because of the prospect that C–H activation would allow the conversion of alkanes into more valuable functionalised organic compounds. This book describes the development in the systems for the catalytic transformations of alkanes under homogeneous conditions. Chapter 1 is a summary of the main discoveries. Chapter 2 reviews the so-called electrophilic activation, initiated by Shul’pin in the late 1960s, and the base for the Catalytica system. Chapter 3 examines the catalytic borylation of alkanes, discovered by Hartwig. Chapter 4 provides an updated vision of the alkane dehydrogenation reaction. Chapter 5 covers the oxygenation of C–H bonds and finally Chapter 6 presents the functionalisation of alkane C–H bonds by carbene or nitrene insertion.

“Celebrating Jewellery: Exceptional Jewels of the Nineteenth and Twentieth Centuries”

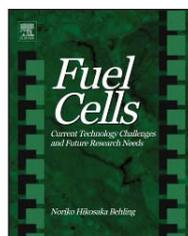


By D. Bennett and D. Mascetti (Sotheby’s, UK), Antique Collectors’ Club Ltd, Old Martlesham, Woodbridge, Suffolk, UK, 2012, 324 pages, ISBN: 978-1-85149-616-7, £75.00, US\$125.00

Some of the greatest and most iconic pieces of jewellery from the nineteenth and twentieth centuries are included in this book. Each jewel is shown in detail, with captions explaining the history and background to its design. All the great jewellery designers and manufacturers are represented. Following the discovery of diamonds

in South Africa around the 1860s, the supply of these gems increased exponentially, enabling jewellers to create ornaments encrusted with these gems. Platinum, then a new metal for use in jewellery, became the metal of choice for setting diamonds. Its combination of hardness and rigidity, coupled with its ‘whiteness’, was perfectly suited to the lacelike filigree mounts of the time; these followed design motifs drawn from Louis XVI ormolu furniture mounts, with swags and garlands delicately set with variously shaped diamonds.

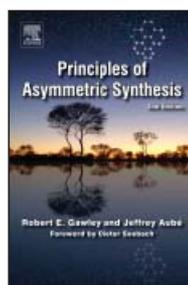
“Fuel Cells: Current Technology Challenges and Future Research Needs”



By N. Hikosaka Behling (USA), Elsevier BV, Amsterdam, The Netherlands, 2013, 685 pages, ISBN: 978-0-444-56325-5, €180.00

This book provides an overview of past and present initiatives to improve and commercialise fuel cell technologies. It reviews government, corporate and research institutions’ policies and programmes related to fuel cell development and their effect on the success or failure of fuel cell programmes. It offers analysis to help potential investors assess fuel cell commercialisation activities and future prospects. It gives policy recommendations as to what should be done to further successfully commercialise fuel cells.

“Principles of Asymmetric Synthesis”, 2nd Edition

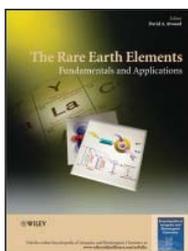


By R. E. Gawley (Department of Chemistry and Biochemistry, University of Arkansas, Fayetteville, Arkansas, USA) and J. Aubé (Department of Medicinal Chemistry, University of Kansas, Lawrence, Kansas, USA), Elsevier Ltd, Kidlington, Oxford, UK, 2012, 555 pages, ISBN: 978-0-08-044860-2, €49.95

The focus of the book is on the principles that govern relative and absolute configurations in transition state assemblies. For example, organisation around a metal atom, $A^{1,3}$ strain, van der Waals interactions, dipolar interactions, etc., are factors affecting transition state energies, and which in turn dictate stereoselectivity *via* transition state theory. The first chapter provides background, introduces the topic of asymmetric synthesis and

outlines principles of transition state theory as applied to stereoselective reactions. Chapter 2 begins with a discussion of practical aspects of obtaining an enantiopure compound, and then describes methods for analysis of mixtures of stereoisomers. Chapter 3 discusses enolate and organolithium alkylations, while Chapter 4 covers nucleophilic additions to C=O and C=N bonds; these two chapters are on reactions in which one new stereocentre is formed. Chapter 5 covers aldol and Michael additions that generate at least two new stereocentres, while Chapter 6 covers selected cycloadditions and rearrangements. The last two chapters are on reductions and oxidations. The book gives many examples of pgm catalysts.

“The Rare Earth Elements: Fundamentals and Applications”



By D. A. Atwood (Department of Chemistry, University of Kentucky, Lexington, Kentucky, USA), John Wiley & Sons, Ltd, Chichester, West Sussex, UK, 2013, 696 pages, ISBN: 978-1-1199-5097-4, £160.00, €191.50, US\$265.00

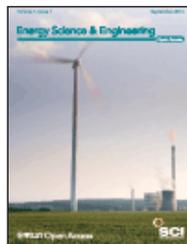
This book explains the chemistry of the lanthanide elements which are often used alongside pgms in catalytic and other applications. A chapter describes the similarity of the Group 3 elements, Sc, Y, La, the group from which the lanthanides originate and the Group 13 elements, particularly Al, having similar properties. The early chapters describe the occurrence and mineralogy of the elements, with a focus on structural features observed in compounds described in later chapters. The majority of the chapters are organised by the oxidation state of the elements, Ln(0), Ln(II), Ln(III) and Ln(IV). The chapters are further distinguished by type of compound, inorganic (oxides and hydroxides, aqueous speciation, halides, alkoxides, amides and thiolates and chelates) and organometallic. The concluding chapters describe the applications of the lanthanides in catalysis, electronic and magnetic materials, and medical imaging, etc.

JOURNALS

Energy Science & Engineering

Editor-in-Chief: T. Kåberger; Wiley and SCI; e-ISSN: 2050-0505

Energy Science & Engineering is a new peer-reviewed, open access journal dedicated to fundamental and applied research on energy and its supply and use.



The journal is published jointly by Wiley and SCI (Society of Chemical Industry). This journal aims to “facilitate collaboration and spark innovation in energy research and development”. The journal will give priority to research papers that are accessible to a broad readership

and discuss sustainable, state-of-the art approaches to “shaping the future of energy”. Topics to be covered include:

- General Energy;
- Fossil Fuels;
- Energy Storage;
- Nuclear Energy;
- Renewable Energy (includes bioenergy, biofuels; solar energy and photovoltaics; and hydrogen, batteries and fuel cells);
- Power Engineering.

Special Issue: Modeling of Exhaust-Gas After-Treatment



Catal. Today, 2012, **188**, (1), 1–134

This special issue of *Catalysis Today* is a selection of the papers given at the 2nd International Symposium on Modeling of Exhaust-Gas After-Treatment (MODEGAT II) held in Bad Herrenalb/Karlsruhe, Germany, on 19th–20th September 2011. The

aim of the symposium was to support the exchange of state-of-the-art modelling and simulation techniques and new approaches. The location, programme and low fee were chosen to try to boost open discussions and new collaborations. The number of attendees was limited to 100; 40 of them were from academia and 60 from industry. A total of 37 papers were submitted and were presented in oral and poster presentations in sessions, each of them focusing on an exhaust gas aftertreatment system: three-way catalysts, diesel oxidation catalysts, selective catalytic reduction, NOx storage catalysts and diesel particulate filters.

Special Issue: Proceedings of the 10th International Conference on Catalysis in Membrane Reactors

Catal. Today, 2012, **193**, (1), 1–226

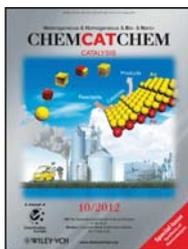
ICCMR10 took place in Saint Petersburg, Russia, on 20th–24th June 2011. It was organised by Topchiev



Institute of Petrochemical Synthesis of the Russian Academy of Sciences and Saint-Petersburg State Institute of Technology (Technical University) and sponsored by Russian Foundation for Basic Research, Russian

Academy of Sciences and European Membrane Society. The conference covered the preparation of new and improved membrane materials, new experimental and modelling achievements and progress reports about old and new proposed applications of membrane reactors. This special issue contains 31 selected papers including: 'Electrocatalytic Properties of the Nanostructured Electrodes and Membranes in Hydrogen-Air Fuel Cells', 'Hydrogen Production from Bio-ethanol Steam Reforming Reaction in a Pd/PSS Membrane Reactor', 'Hydrogen Production from Ethanol over Pd-Rh/CeO₂ with a Metallic Membrane Reactor', and 'Hydrogen Transport through a Selection of Thin Pd-Alloy Membranes: Membrane Stability, H₂S Inhibition, and Flux Recovery in Hydrogen and Simulated WGS Mixtures'.

Special Issue: Synthesis of Nanocatalysts



ChemCatChem, 2012, 4, (10), 1441–1682

The ultimate goal of research and development on heterogeneous catalysis is to provide a “fundamental understanding of the nature of active sites toward the design of efficient heterogeneous catalysts that

provide highest activity, 100% selectivity and long-term stability”. This special issue of *ChemCatChem* was put together with this in mind. The editorial ‘Catalyst Synthesis by Design for the Understanding of Catalysis’ is by Shu-Hong Yu (Department of Chemistry, University of Science and Technology of China, Hefei, China), Franklin (Feng) Tao (Department of Chemistry and Biochemistry, University of Notre Dame, USA) and Jimmy (Jingyue) Liu (Department of Physics, Arizona State University, USA). Relevant items include ‘Study of the Durability of Faceted Pt₃Ni Oxygen-Reduction Electrocatalysts’, ‘A Multi-Yolk-Shell Structured Nanocatalyst Containing Sub-10 nm Pd Nanoparticles in Porous CeO₂’, ‘Ordered Mesoporous Carbon Supported Colloidal Pd Nanoparticle Based Model Catalysts for Suzuki Coupling Reactions: Impact of Organic Capping Agents’, and ‘A Highly Selective

Catalyst for Partial Hydrogenation of 1,3-Butadiene: MgO-Supported Rhodium Clusters Selectively Poisoned with CO’.

Themed Issue: Homogeneous and Heterogeneous Catalysis in Industry



Catal. Sci. Technol., 2012, 2, (10), 1997–2154

In this themed issue of *Catalysis Science & Technology*, advances in modelling, biomass utilisation and ligand design in processes that range from high-temperature high-pressure high-tonnage to small-scale ambient-pressure liquid-phase are covered. The editorial is by Johannes G. de Vries (DSM Innovative Synthesis BV, The Netherlands) and S. David Jackson (Department of Chemistry, University of Glasgow, UK). Items of interest include: ‘Synthesis of Methanol and Dimethyl Ether from Syngas over Pd/ZnO/Al₂O₃ Catalysts’, ‘Direct Coupling of Alcohols to Form Esters and Amides with Evolution of H₂ Using *In Situ* Formed Ruthenium Catalysts’, ‘Steam Reforming of Ethanol at Medium Pressure over Ru/Al₂O₃: Effect of Temperature and Catalyst Deactivation’, and ‘Syngas Production by CO₂ Reforming of Methane Using LnFeNi(Ru)O₃ Perovskites as Precursors of Robust Catalysts’.

ON THE WEB

Encyclopedia of Applied Electrochemistry



The Encyclopedia of Applied Electrochemistry on SpringerReference.com will provide in alphabetical order an authoritative compilation of entries covering applied aspects of electrochemistry, including basic theoretical concepts and laboratory techniques.

Find this at: [http://www.springerreference.com/docs/navigation.do?m=Encyclopedia+of+Applied+Electrochemistry+\(Chemistry+and+Material+Science\)-book161](http://www.springerreference.com/docs/navigation.do?m=Encyclopedia+of+Applied+Electrochemistry+(Chemistry+and+Material+Science)-book161)

25 Prominent and Promising Applications Using Platinum Group Metals

Founded in 1987, the IPA (International Platinum Group Metals Association) represents the leading mining, production and fabrication companies in the global pgms industry, comprising platinum,



palladium, iridium, rhodium, osmium and ruthenium. The IPA has currently fifteen members. Its mission is to provide a platform to address issues of common concern and to jointly engage with stakeholders at the international level. On the occasion of its 25th Anniversary the IPA have put together the Fact Sheet “25 Prominent and Promising Applications Using Platinum Group Metals”.

Find this at: <http://www.ipa-news.com/>

“25 Prominent and Promising Applications Using Platinum Group Metals”: http://www.ipa-news.com/en/files/25_applications_of_pgms.pdf