

## In this issue

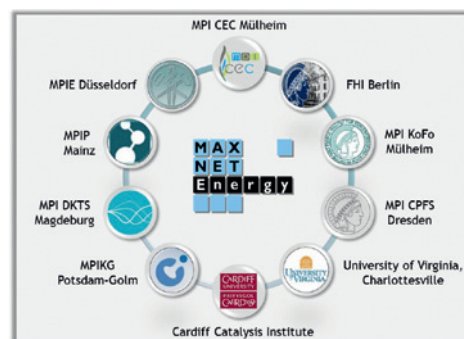
Alexander A. Auer, et al.

### MAXNET Energy – Focusing Research in Chemical Energy Conversion on the Electrocatalytic Oxygen Evolution

DOI 10.1515/green-2015-0021  
Green 2015; 5(1-6): 7–21

**Review:** The MAXNET Energy research consortium is a Max Planck Society initiative consisting of ten institutions. Research is focused on electrocatalytic activation of small molecules like oxygen evolution.

**Keywords:** electrocatalysis, chemical energy conversion, oxygen evolution

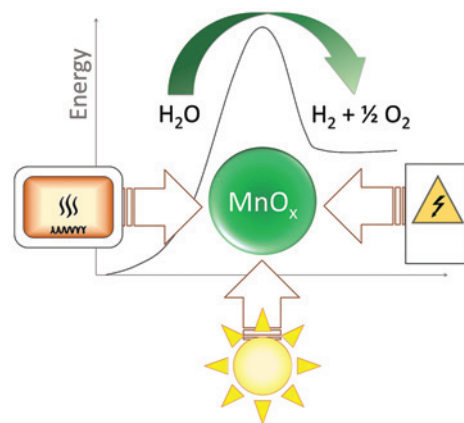


Simon Ristig, Niklas Cibura and Jennifer Strunk  
**Manganese Oxides in Heterogeneous (Photo)Catalysis: Possibilities and Challenges**

DOI 10.1515/green-2015-0010  
Green 2015; 5(1-6): 23–41

**Review:** A summary of the current status and the progress on the research regarding manganese oxides in photocatalysis and heterogeneous catalysis is given, outlining also the complexity of  $MnO_x$  systems.

**Keywords:** Oxygen evolution, oxygen activation, water splitting, selective oxidation, physicochemical properties of manganese oxides, nanostructured semiconductors



Salvatore Abate, Gabriele Centi and Siglinda Perathoner  
**Chemical Energy Conversion as Enabling Factor to Move to a Renewable Energy Economy**

DOI 10.1515/green-2015-0011  
Green 2015; 5(1-6): 43–54

**Review:** Chemical energy storage, with the development of drop-in carbon-based solar fuels, plays a central role in the future low-carbon economy, but it is necessary to consider its out-of-the-grid use.

**Keywords:** solar fuels,  $CO_2$ , chemical energy storage, renewable energy economy, sustainable energy and chemistry

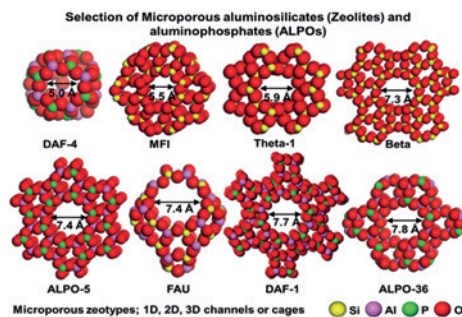


John Meurig Thomas  
**Opportunities for New Catalysts in the Present Confusing Scene in Renewable Energy**

DOI 10.1515/green-2015-0012  
 Green 2015; 5(1-6): 55–58

**Expert View:** A prominent feature of present-day green chemistry is the use of nanoporous oxides, composed of earth-abundant elements, that can be readily fashioned into highly efficient single-site heterogeneous catalysts.

**Keywords:** materials chemistry, sustainability, catalysts

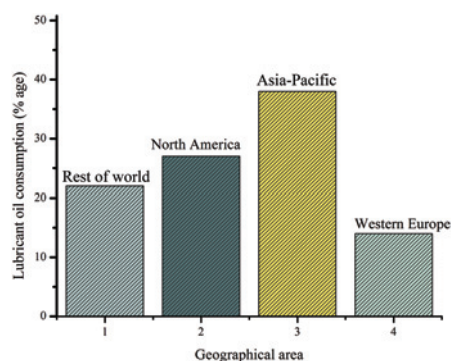


Yashvir Singh, Rajnish Garg and Suresh Kumar  
**Aspects of Non-edible Vegetable Oil-Based Bio-lubricants in the Automotive Sector**

DOI 10.1515/green-2015-0003  
 Green 2015; 5(1-6): 59–72

**Review:** There is only little literature in case of non-edible vegetable oil-based bio-lubricants. The present study can support and encourage research on using the non-edible oil-based bio-lubricants as alternatives.

**Keywords:** bio-lubricant, automobile, applications



Rosaria Ciriminna, Francesco Meneguzzo, Lorenzo Albanese and Mario Pagliaro  
**Guidelines for Integrating Solar Energy in Sicily's Buildings**

DOI 10.1515/green-2015-0014  
 Green 2015; 5(1-6): 73–82

**Review:** Rendering of Palermo's Theatre Biondo with building-integrated state-of-the-art PV modules, currently undergoing the authorization process. This study provides guidelines for the architectural integration of both main solar technologies in Sicily.

**Keywords:** BIPV, BIST, photovoltaic, solar thermal, solar energy education, solar architecture

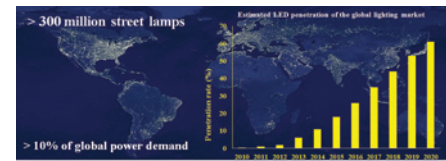


Rosaria Ciriminna, Lorenzo Albanese, Francesco Meneguzzo and Mario Pagliaro  
**LED Street Lighting: A Looking Ahead Perspective**

DOI 10.1515/green-2015-0020  
 Green 2015; 5(1-6): 83–94

**Review:** The path to sustainable global shift of street lighting – 300 million lamps – to LED technology is comprehensively analyzed, including clear benefits and criticalities, along with health, environmental and aesthetic issues.

**Keywords:** LED lighting, light pollution, road lighting, energy management, lighting design, systems approach



**LED vs conventional HLD street lighting**

- LED Prices sinking, efficiency rising
- LED investment pay-back = 3-5 years
- Energy saving up to 80%

→ Health, environment, aesthetics

- ❖ No harmful gas emissions
- ❖ Photobiological safety
- ❖ Improved object detection (road safety)
- ❖ Reduced sky glow (light pollution)
- ❖ Reduced CO2 emissions



Sachin Muralee Krishna, Nimal Madhu M, Vivek Mohan, Reshma Suresh M P and Jai Govind Singh  
**A Generalized Approach for Enhanced Solar Energy Harvesting Using Stochastic Estimation of Optimum Tilt Angles: A Case Study of Bangkok City**

DOI 10.1515/green-2015-0015  
 Green 2015; 5(1-6): 95–107

**Original Article:** From four diffused radiation models, the best sky model is opted, for which solar radiation PDFs are estimated with K-S test. Then, monthly, seasonal and yearly optimal tilt angles are calculated with PSO-TVAC for Bangkok.

**Keywords:** tilt angle, diffused radiation models, particle swarm optimization (PSO), error analysis, probabilistic uncertainty, solar energy harvesting

