

## Reviews

7237 DOI: 10.1021/acs.energyfuels.8b00579

**Cashew Nut Shell Liquid as a Fuel for Compression Ignition Engines: A Comprehensive Review**

Shiva Kumar, Dinesha P,\* and Marc A. Rosen

7245 DOI: 10.1021/acs.energyfuels.8b00947

**Kinetic and Reactor Modeling of Catalytic Hydrotreatment of Vegetable Oils**

Alexis Tirado, Jorge Ancheyta,\* and Fernando Trejo

7262 DOI: 10.1021/acs.energyfuels.8b01347

***n*-Alkanes Phase Change Materials and Their Microencapsulation for Thermal Energy Storage: A Critical Review**

Hao Peng,\* Dong Zhang, Xiang Ling, Yang Li, Yan Wang, Qinghua Yu,\* Xiaohui She, Yongliang Li, and Yulong Ding

7294 DOI: 10.1021/acs.energyfuels.8b01678

**A Combined Overview of Combustion, Pyrolysis, and Gasification of Biomass**

Ali Akhtar,\* Vladimir Krepl, and Tatiana Ivanova

## Articles

### Fossil Fuels

7319 DOI: 10.1021/acs.energyfuels.7b03954

**Electrical Double-Layer Expansion Impact on the Oil–Quartz Adhesion for High- and Low-Salinity Brines**

Marfa Nazarova, Patrick Bouriat, and Patrice Creux\*

7326  DOI: 10.1021/acs.energyfuels.8b00502

**Removing Water from Diesel Fuel: Understanding the Impact of Droplet Size on Dynamic Interfacial Tension of Water-in-Fuel Emulsions**

Shweta Narayan, Davis B. Moravec, Brad G. Hauser, Andrew J. Dallas, and Cari S. Dutcher\*

7338 DOI: 10.1021/acs.energyfuels.8b00512

**Isothermal Titration Calorimetry Study of Brine–Oil–Rock Interactions**

Jacquelin E. Cobos, Peter Westh, and Erik G. Søgaard\*

7347 **S** DOI: 10.1021/acs.energyfuels.8b00639  
**Evaluation of Thin-Layer Chromatography–Laser Desorption Ionization Fourier Transform Ion Cyclotron Resonance Mass Spectrometric Imaging for Visualization of Crude Oil Interactions**  
Ali Zahraei, Peter W. F. Arisz, Alexander P. van Bavel, and Ron M. A. Heeren\*

7358 DOI: 10.1021/acs.energyfuels.8b00701  
**Source, Age, and Evolution of Coal Measures Water in Central-South Qinshui Basin, China**  
Haichao Wang, Xuehai Fu,\* Xiaoyang Zhang, Qinghe Niu, Yanyan Ge, Jijun Tian, Xiaoqian Cheng, Ning Chen, Xiaolin Hou, and Hua Du

7374 DOI: 10.1021/acs.energyfuels.8b00790  
**Role of Kaolinite Clay Minerals in Enhanced Oil Recovery by Low Salinity Water Injection**  
Tina Puntervold,\* Aleksandr Mamonov, Zahra Aghaeifar, Gunvor Oline Frafjord, Gyrid Marie Moldestad, Skule Strand, and Tor Austad

7383 **S** DOI: 10.1021/acs.energyfuels.8b00908  
**Discovery of High-Abundance Diamondoids and Thiadiamondoids and Severe TSR Alteration of Well Z51C Condensate, Tarim Basin, China**  
Guangyou Zhu,\* Ying Zhang, Meng Wang, and Zhiyao Zhang

7393 DOI: 10.1021/acs.energyfuels.8b01025  
**Occurrence and Distribution of Unusual Tri- and Tetracyclic Terpanes and Their Geochemical Significance in Some Paleogene Oils from China**  
Hong Xiao, Tie-Guan Wang, Meijun Li,\* Jian Fu, Youjun Tang, Shengbao Shi, Zhe Yang, and Xiaolin Lu

7404 **S** DOI: 10.1021/acs.energyfuels.8b01054  
**Separation and Composition Analysis of GC/MS Analyzable and Unanalyzable Parts from Coal Tar**  
Ming Sun,\* Dan Zhang, Qiuxiang Yao, Yongqi Liu, Xiaoping Su, Charles Q. Jia, Qingqing Hao, and Xiaoxun Ma\*

7412 **S** DOI: 10.1021/acs.energyfuels.8b01128  
**Biobased Cadaverine as a Green Template in the Synthesis of NiO/ZSM-5 Nanocomposites for Removal of Petroleum Asphaltenes: Financial Analysis, Isotherms, and Kinetics Study**  
Mehdi Sedighi, Majid Mohammadi,\* Mojtaba Sedighi, and Mostafa Ghasemi

7423 DOI: 10.1021/acs.energyfuels.8b01190  
**Paleoenvironment and Controlling Factors of Oligocene Source Rock in the Eastern Deep-Water Area of the Qiongdongnan Basin: Evidences from Organic Geochemistry and Palynology**  
Piao Wu, Dujie Hou,\* Jun Gan, Xing Li, Wenjing Ding, Gang Liang, and Bibo Wu

7438 DOI: 10.1021/acs.energyfuels.8b01217  
**Relevance between Various Phenomena during Coking Coal Carbonization. Part 1: A New Testing Method Developed on a Sapozhnikov Plastometer**  
Qi Wang,\* Huan Cheng, Xue-fei Zhao, Song Zhang, and Wen-jia Hu

7444 DOI: 10.1021/acs.energyfuels.8b01250  
**Experimental and Numerical Study on Oxidation Deposition Properties of Aviation Kerosene**  
Xinyan Pei, Lingyun Hou,\* and William L. Roberts

7451 DOI: 10.1021/acs.energyfuels.8b01285  
**Probing Bitumen Liberation by a Quartz Crystal Microbalance with Dissipation**  
Bailin Xiang, Qingxia Liu,\* and Jun Long

7458 **S** DOI: 10.1021/acs.energyfuels.8b01328  
**Rapid Heterogeneous Asphaltene Precipitation with Dispersed Solids**  
Wattana Chaisoontornytin, Jingzhou Zhang, Samson Ng, and Michael P. Hoepfner\*

7467 DOI: 10.1021/acs.energyfuels.8b01350  
**Porosity of Drill-Cuttings Using Multinuclear <sup>19</sup>F and <sup>1</sup>H NMR Measurements**  
Kamilla Fellah, Shin Utsuzawa, Yi-Qiao Song, and Ravinath Kausik\*

7471 DOI: 10.1021/acs.energyfuels.8b01369  
**Pore Structure Characterization of the Tight Reservoir: Systematic Integration of Mercury Injection and Nuclear Magnetic Resonance**  
Liang Wang,\* Ning Zhao, Liqiang Sima,\* Fan Meng, and Yuhao Guo

7485 DOI: 10.1021/acs.energyfuels.8b01397  
**Methane Adsorption Characteristics and Adsorption Model Applicability of Tectonically Deformed Coals in the Huaibei Coalfield**  
Guanwen Lu, Chongtao Wei,\* Jilin Wang, Gaoyuan Yan, Junjian Zhang, and Yu Song

7497 **S** DOI: 10.1021/acs.energyfuels.8b01403  
**Theoretical Study of Oil Desulfuration by Ammonium-Based Deep Eutectic Solvents**  
Alberto Gutiérrez, Mert Atilhan,\* and Santiago Aparicio\*

7508 DOI: 10.1021/acs.energyfuels.8b01433  
**Separation of CH<sub>4</sub>/C<sub>2</sub>H<sub>6</sub> Mixture Using Functionalized Nanoporous Silicon Carbide Nanosheet**  
Jafar Azamat and Alireza Khataee\*

- 7519 **S** DOI: 10.1021/acs.energyfuels.8b01494  
**Equilibrium Partitioning of Naphthenic Acid Mixture, Part 1: Commercial Naphthenic Acid Mixture**  
Are Bertheussen,\* Sébastien Simon, and Johan Sjöblom
- 7539 DOI: 10.1021/acs.energyfuels.8b01501  
**Applying Fractal Theory to Characterize the Pore Structure of Lacustrine Shale from the Zhanhua Depression in Bohai Bay Basin, Eastern China**  
Jianping Yan,\* Shaolong Zhang, Jun Wang, Qinhong Hu,\* Min Wang, and Jing Chao
- 7557 DOI: 10.1021/acs.energyfuels.8b01557  
**Improved Understanding of the Alteration of Molecular Compositions by Severe to Extreme Biodegradation: A Case Study from the Carboniferous Oils in the Eastern Chepaizi Uplift, Junggar Basin, Northwest China**  
Xiangchun Chang,\* Honggang Zhao, Wenxiang He, Yaohui Xu, Youde Xu, and Yue Wang
- 7569 DOI: 10.1021/acs.energyfuels.8b01614  
**FLASHCHAIN Theory for Rapid Coal Devolatilization Kinetics. 11. Tar Hydroconversion during Hydrogasification of Any Coal**  
Stephen Niksa\*
- 7585 DOI: 10.1021/acs.energyfuels.8b01682  
**Methane Recovery from Hydrate-Bearing Sediments by the Combination of Ethylene Glycol Injection and Depressurization**  
Yi-Fei Sun, Jin-Rong Zhong, Wen-Zhi Li, Yi-Ming Ma, Rui Li, Tao Zhu, Liang-Liang Ren, Guang-Jin Chen,\* and Chang-Yu Sun\*
- 7595 **S** DOI: 10.1021/acs.energyfuels.7b03958  
**Feasibility of Power and Methanol Production by an Entrained-Flow Coal Gasification System**  
Xiaomeng Wang and Yaşar Demirel\*
- Biofuels and Biomass**
- 7611 **S** DOI: 10.1021/acs.energyfuels.8b00668  
**Two-Stage Hydrothermal Liquefaction of Sweet Sorghum Biomass—Part 1: Production of Sugar Mixtures**  
Yang Yue, James R. Kastner, and Sudhagar Mani\*
- 7620 **S** DOI: 10.1021/acs.energyfuels.8b00669  
**Two-Stage Hydrothermal Liquefaction of Sweet Sorghum Biomass—Part II: Production of Upgraded Biocrude Oil**  
Yang Yue, James R. Kastner, and Sudhagar Mani\*
- 7630 DOI: 10.1021/acs.energyfuels.8b00749  
**Lipase-Mediated Selective Methanolysis of Fish Oil for Biodiesel Production and Polyunsaturated Fatty Acid Enrichment**  
Gaojian Ma, Lingmei Dai, Dehua Liu, and Wei Du\*

- 7636 **S** DOI: 10.1021/acs.energyfuels.8b00864  
**SPORL Pretreatment Spent Liquors Enhance the Enzymatic Hydrolysis of Cellulose and Ethanol Production from Glucose**  
Haifeng Zhou,\* Roland Gleisner, J.Y. Zhu, Yuanyu Tian, and Yingyun Qiao
- 7643 **S** DOI: 10.1021/acs.energyfuels.8b01032  
**Lignin Valorization: A Novel in Situ Catalytic Hydrogenolysis Method in Alkaline Aqueous Solution**  
Da Wang, Yuyang Wang, Xiaoyu Li, Lei Chen, Guangci Li, and Xuebing Li\*
- 7652 **S** DOI: 10.1021/acs.energyfuels.8b01055  
**Theoretical Studies on Isomerization and Decomposition Reactions of 2-Methyl-1-butanol Radicals**  
Zheng Zhong, Yitong Zhai, Xueyao Zhou, Beibei Feng, Chengcheng Ao, and Lidong Zhang\*
- 7660 DOI: 10.1021/acs.energyfuels.8b01208  
**Rapid Determination of Water, Total Acid Number, and Phenolic Content in Bio-Crude from Hydrothermal Liquefaction of Biomass using FT-IR**  
René B. Madsen, Konstantinos Anastasakis, Patrick Biller, and Marianne Glasius\*
- 7670 DOI: 10.1021/acs.energyfuels.8b01249  
**Benzene Conversion in a Packed Alumina Bed Continuously Fed with Woody Char Particles**  
Mario Morgalla,\* Leteng Lin, and Michael Strand
- 7678 DOI: 10.1021/acs.energyfuels.8b01309  
**Effects of the Particle Size and Gasification Atmosphere on the Changes in the Char Structure during the Gasification of Mallee Biomass**  
Shuai Wang, Liping Wu, Xun Hu, Lei Zhang, Tingting Li, and Chun-Zhu Li\*
- 7685 DOI: 10.1021/acs.energyfuels.8b01359  
**Aerodynamic and Physical Characterization of Refuse Derived Fuel**  
Mohammadhadi Nakhaei,\* Morten Nedergaard Pedersen, Hao Wu,\* Lars Skaarup Jensen, Peter Glarborg, Peter Arendt Jensen, Damien Grévin, and Kim Dam-Johansen
- Environmental and Carbon Dioxide Issues**
- 7701 **S** DOI: 10.1021/acs.energyfuels.8b00756  
**Two-Stage Chemical Absorption—Biological Reduction System for NO Removal: System Start-up and Optimal Operation Mode**  
Chunyan Zhang, Jingkai Zhao, Cheng Sun, Sujing Li, Dongxiao Zhang, Tianjiao Guo,\* and Wei Li\*
- 7708 DOI: 10.1021/acs.energyfuels.8b01090  
**Oxygen Uncoupling of Cu-Based Oxygen Carrier with the Presence of Coal Ash in Chemical Looping Process**  
Ruijie Gong, Changlei Qin,\* Donglin He, Lili Tan, and Jingyu Ran\*

7718 DOI: 10.1021/acs.energyfuels.8b01111  
**Influence of Chlorine on the Fate of Pb and Cu during Clinkerization**  
Bin Zhang, Anna Bogush, Jiangxiong Wei,\* Weiting Xu, Zhengxiang Zeng, Tongsheng Zhang, Qijun Yu, and Julia Stegemann

7727 DOI: 10.1021/acs.energyfuels.8b01129  
**Efficient and Reversible Absorption of CO<sub>2</sub> by Functional Deep Eutectic Solvents**  
Kai Zhang, Yucui Hou, Yiming Wang, Kun Wang, Shuhang Ren,\* and Weize Wu\*

7734 DOI: 10.1021/acs.energyfuels.8b01124  
**Density Functional Theory Study of the Role of a Carbon–Oxygen Single Bond Group in the NO–Char Reaction**  
Tong Zhao, Wenli Song, Chuigang Fan,\* Songgeng Li, Peter Glarborg, and Xiaoqian Yao

7745 DOI: 10.1021/acs.energyfuels.8b01188  
**Adsorption and Oxidation of Elemental Mercury on Chlorinated ZnS Surface**  
Hailong Li, Shihao Feng, Wenqi Qu, Jianping Yang, Suojian Liu, and Yang Liu\*

## Efficiency and Sustainability

7752 DOI: 10.1021/acs.energyfuels.8b00596  
**Compositional and Structural Analysis of Silica Gel Fractions from Municipal Waste Pyrolysis Oils**  
Rebecca L. Ware, Steven M. Rowland, Jie Lu, Ryan P. Rodgers,\* and Alan G. Marshall\*

7762 DOI: 10.1021/acs.energyfuels.8b00768  
**Study of the Imbibition Behavior of Hydrophilic Tight Sandstone Reservoirs Based on Nuclear Magnetic Resonance**  
Xiaoxia Ren, Aifen Li,\* Guijuan Wang, Bingqing He, and Shuaishi Fu

7773 DOI: 10.1021/acs.energyfuels.8b01131  
**An Integrated Property–Performance Analysis for CO<sub>2</sub>-Philic Foam-Assisted CO<sub>2</sub>-Enhanced Oil Recovery**  
Seyedeh Hosna Talebian,\* Muhammad Sagir, and Mudassar Mumtaz

## Catalysis and Kinetics

7786 DOI: 10.1021/acs.energyfuels.8b00792  
**High Density Alkyl Diamondoid Fuels Synthesized by Catalytic Cracking of Alkanes in the Presence of Adamantane**  
Kale W. Harrison, Kyle E. Rosenkoetter, and Benjamin G. Harvey\*

7792 DOI: 10.1021/acs.energyfuels.8b00838  
**Dechlorination of Polyvinyl Chloride under Superheated Steam with Catalysts and Adsorbents**  
A. Muaz Hapipi, Hiroki Suda, Md. Azhar Uddin, and Yoshiei Kato\*

7800 DOI: 10.1021/acs.energyfuels.8b01454  
**Optimal Synthesis of Hierarchical Porous Composite ZSM-5/SBA-16 for Ultradeep Hydrodesulfurization of Dibenzothio-  
phene and 4,6-Dimethyldibenzothiophene. Part 2: The Influence of Aging Temperature on the Properties of NiMo  
Catalysts**  
Xilong Wang, Peng Du, Zhen Zhao, Jinlin Mei, Zhentao Chen, Yuyang Li, Peng Zheng, Jiyuan Fan, Aijun Duan,\* and  
Chunming Xu\*

7810 DOI: 10.1021/acs.energyfuels.8b01516  
**Stability of Fe- and Zn-Promoted Mo/ZSM-5 Catalysts for Ethane Dehydroaromatization in Cyclic Operation Mode**  
Brandon Robinson, Xinwei Bai, Anupam Samanta, Victor Abdelsayed, Dushyant Shekhawat, and Jianli Hu\*

7820 DOI: 10.1021/acs.energyfuels.8b01571  
**Cobalt-Molybdenum Single-Layered Nanocatalysts Decorated on Carbon Nanotubes and the Influence of Preparation  
Conditions on Their Hydrodesulfurization Catalytic Activity**  
Jamie Whelan, Marios S. Katsiotis, Samuel Stephen, Gisha E. Luckachan, Anjana Tharalekshmy, Nicoleta Doriana Banu,  
Juan-Carlos Idrobo, Sokrates T. Pantelides, Radu V. Vladea, Ionut Banu, and Saeed M. Alhassan\*

## Combustion

7827 DOI: 10.1021/acs.energyfuels.7b03894  
**Prediction of the Ash Deposition Characteristics of Blended Coals in a 500 MWe Tangentially Fired Boiler**  
Kwonwoo Jang, Karam Han, GwangGoo Lee, Se H. Baek, Ho Y. Park, and Kang Y. Huh\*

7841 DOI: 10.1021/acs.energyfuels.7b04051  
**Investigation on Soot Characteristics of Gasoline/Diesel Blends in a Laminar Coflow Diffusion Flame**  
Fushui Liu, Yongli Gao, Han Wu,\* Zheng Zhang, Xu He, and Xiangrong Li

7851 DOI: 10.1021/acs.energyfuels.8b00796  
**Influence of the Flue Gas Temperature on the Behavior of Metals during Biomass Combustion**  
Helga Kovacs,\* Zsolt Dobo, Tamas Koos, Adrienn Gyimesi, and Gabor Nagy

7857 DOI: 10.1021/acs.energyfuels.8b01112  
**Reaction Mechanism for Syngas Preparation by Lignite Chemical Looping Gasification Using Phosphogypsum Oxygen  
Carrier**  
Jie Yang, Liping Ma,\* Dalong Zheng, Siqi Zhao, and Yuhui Peng

7868 DOI: 10.1021/acs.energyfuels.8b01133  
**Adiabatic Flame Temperature for Controlling the Macrostructures and Stabilization Modes of Premixed Methane Flames  
in a Model Gas-Turbine Combustor**  
Ahmed Abdelhafez,\* Medhat A. Nemitallah, Sherif S. Rashwan, and Mohamed A. Habib

7878 <sup>S</sup> DOI: 10.1021/acs.energyfuels.8b01237  
**Industrial Experiments on Anthracite Combustion and NO<sub>x</sub> Emissions with Respect to Swirling Secondary Air for a 300 MW<sub>e</sub> Deep-Air-Staged Down-Fired Utility Boiler**  
 Qingxiang Wang, Zhichao Chen,\* Tao Liu, Lingyan Zeng, Xin Zhang, He Du, and Zhengqi Li

7888 DOI: 10.1021/acs.energyfuels.8b01256  
**Ignition Behavior of Benzoic Resin Solid Fuel Pellets over a Surface Induction Heating Plate Using a Liquefied Petroleum Gas Flame Ignitor**  
 Venkat Pranesh,\* S. Balasubramanian, S. Mahalingam, S. Ravikumar, T. Christo Michael, and B. Kanimozhi

7898 <sup>S</sup> DOI: 10.1021/acs.energyfuels.8b01334  
**Combustion Behavior of High Energy Density Borane–Aluminum Nanoparticles in Hypergolic Ionic Liquids**  
 Jiang Yu, Tonya N. Jensen, William K. Lewis, Christopher E. Bunker, Steven P. Kelley, Robin D. Rogers, Owen M. Pryor, Steven D. Chambreau, Ghanshyam L. Vaghjiani, and Scott L. Anderson\*

7909 DOI: 10.1021/acs.energyfuels.8b01366  
**Effect of Air Distribution on NO<sub>x</sub> Emissions of Pulverized Coal and Char Combustion Preheated by a Circulating Fluidized Bed**  
 Shujun Zhu, Qinggang Lyu,\* Jianguo Zhu,\* Huixing Wu, and Guanglong Wu

7916 <sup>S</sup> DOI: 10.1021/acs.energyfuels.8b01313  
**FACE Gasoline Surrogates Formulated by an Enhanced Multivariate Optimization Framework**  
 Shane R. Daly, Kyle E. Niemeyer, William J. Cannella, and Christopher L. Hagen\*

7933 <sup>S</sup> DOI: 10.1021/acs.energyfuels.8b01401  
**Oxidation Behavior and Kinetics of Eight C<sub>20</sub>–C<sub>54</sub> n-Alkanes by High Pressure Differential Scanning Calorimetry (HP-DSC)**  
 Chengdong Yuan,\* Dmitrii A. Emelianov, Mikhail A. Varfolomeev,\* Wanfen Pu, and Alexandra S. Ushakova

7943 DOI: 10.1021/acs.energyfuels.8b01460  
**Thermal Characteristics of a CH<sub>4</sub> Jet Flame in Hot Oxidant Stream: Dilution Effects of CO<sub>2</sub> and H<sub>2</sub>O**  
 C. Dai, B. Wang, Z. Shu, and J. Mi\*

7959 <sup>S</sup> DOI: 10.1021/acs.energyfuels.8b01539  
**α-Fe<sub>2</sub>O<sub>3</sub> Nanoparticles as Oxygen Carriers for Chemical Looping Combustion: An Integrated Materials Characterization Approach to Understanding Oxygen Carrier Performance, Reduction Mechanism, and Particle Size Effects**  
 Hayder A. Alalwan, Sara E. Mason, Vicki H. Grassian,\* and David M. Cwiertny\*

## Batteries and Energy Storage

7971 DOI: 10.1021/acs.energyfuels.8b01431  
**Autothermal Reforming of Diesel to Hydrogen and Activity Evaluation**  
 Lin Lin,\* Ling-qiong Wu, Li-ran Sui, and Shao-heng He\*

## Process Engineering

7978 DOI: 10.1021/acs.energyfuels.8b00789  
**Optimization of CO<sub>2</sub> Capture from Simulated Flue Gas Using K<sub>2</sub>CO<sub>3</sub>/Al<sub>2</sub>O<sub>3</sub> in a Micro Fluidized Bed Reactor**  
 Mohsen Amiri and Shahrokh Shahhosseini\*

7991 DOI: 10.1021/acs.energyfuels.8b01232  
**Time and Temperature Effects on Alkali Chloride Induced High Temperature Corrosion of Superheaters during Biomass Firing**  
 Sunday Chukwudi Okoro,\* Melanie Montgomery, Flemming Jappe Frandsen, and Karen Pantleon

8000 DOI: 10.1021/acs.energyfuels.8b01316  
**Study on Influence Factors of Leaching of Rare Earth Elements from Coal Fly Ash**  
 Shanshan Cao, Changchun Zhou,\* Jinhe Pan, Cheng Liu, Mengcheng Tang, Wanshun Ji, Tingting Hu, and Ningning Zhang\*

8006 <sup>S</sup> DOI: 10.1021/acs.energyfuels.8b01524  
**Liquid–Liquid Extraction of Benzene and Cyclohexane Using Sulfolane-Based Low Transition Temperature Mixtures as Solvents: Experiments and Simulation**  
 Shoutao Ma, Jinfang Li, Lumin Li, Xianyong Shang, Shikai Liu, Changyong Xue, and Lanyi Sun\*

<sup>S</sup> Supporting Information available via online article