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Transportation Fuels and Refining Technology Expert

Over 40 years of experience in many aspects of petroleum refining technology and management, especially Hydroprocessing, Catalytic Cracking, Biofuels, Economics and Emissions. Outstanding record of fundamental research, process/project development and implementation as well as technical service and technical training.

Experience Summary:

PetroTech Consultants 2000- present
Principal of consulting firm specializing in Petroleum and Biofuels Refining Technology
Mobil Corporation 1973-2000
Senior Technical Expert in Refining Process Technology with special emphasis on Catalytic Cracking, Hydroprocessing and reactor design. Past Manager of Corporate Hydroprocessing Research and Technical Service group. Provided world-wide technical service and troubleshooting, technical input into laboratory experimental programs and the process design of new commercial units along with environmental and economic advice.

Recent Accomplishments

- Member of two US National Research Council committees evaluating the economic and environmental impacts of increasing biofuels production and alternate vehicle and fuels technologies
- Provided technology guidance to DARPA for the production of HEFA type bio based jet fuels
- Provided technical guidance to several commercial bio and alternative fuels companies
- Provided process designs for several Hydrocracking and ULSD units.
- Developed design for commercial biofuels hydrotreater
- Coordinated technology evaluation pilot unit studies for multiple clients
- Prepared a detailed assessment of the US refining industry's capabilities to produce ULSD.
- Prepared a detailed technical and economic assessment of solid acid alkylation technologies
- Evaluated technical and economic feasibility for producing 10 and 30ppm sulfur gasoline.
- Diagnosed performance problems of commercial hydroprocessing and FCC units.
- Assisted client in troubleshooting and improving novel fluid bed technology.
- Consulted on FCC emissions issues
- Provided expert testimony for FERC on refining economics
- Prepared expert reports on refinery environmental and technical issues
- Currently teach several refining technology courses for Refining Process Services.

Education

Ph. D. Chemical Engineering, Princeton University, Princeton, New Jersey 1985
M. A. Chemical Engineering, Princeton University, Princeton, New Jersey 1982
M. S. Chemical Engineering, Drexel University, Philadelphia, Pennsylvania, 1976
B. S. Chemical Engineering, Drexel University, Philadelphia, Pennsylvania, 1973
New Jersey Professional Engineer, License No. 24GE26348

Other Accomplishments

Process Consultant, FCC and Clean Fuels Technology – Senior technical expert in refining process technology.

- Initiated the development of Mobil's Cyclofine FCC third stage separator technology.
- Initiated the development of Mobil's improved FCC stripper technology.
- Designed and coordinated an extensive FCC pilot unit program to better understand the effects of feed quality on FCC yields and product properties.
- Provided guidance to various refineries regarding Air Emissions Compliance and Testing.
- Managed the rapid commercialization of Mobil's Octgain process for producing low sulfur gasoline.
- Provided technical and economic guidance for several major FCC and Hydroprocessing revamps.
- Provided on-site FCC turnaround and troubleshooting support.
- Provided "cold eyes" and Value Engineering reviews of major projects.
- Participated in several refinery yield improvement surveys.
- Evaluated adsorption technology for removing sulfur from gasoline.
- Responsible for overseeing Mobil's FCC and Hydrocracking modeling efforts.
- Improved the FCC and Hydroprocessing representations in refinery planning and operational LP's.
- Developed process for upgrading Sasol's Fischer-Tropsch liquids.
- Commercialized Mobil's Xylene Isomerization technology

Papers

Photoacoustic Spectroscopy Applied to Heterogeneous Catalysis, S.J.McGovern, B.S.H.Royce, J.B.Benziger, 1984 Annual AIChE Meeting, San Francisco, CA, November 1984

Infrared Photoacoustic Spectroscopy of Adsorption on Powders, S.J.McGovern, B.S.H.Royce, J.B.Benziger, Applications of Surface Science, 18 p. 401 (1984)

The Importance of Interstitial Gas Expansion in Infrared Photoacoustic Spectroscopy of Powders, S.J.McGovern, B.S.H.Royce, J.B.Benziger, Journal of Applied Physics, Vol. 57 (5) p. 1710 (1985)

Analytical Photoacoustic Spectroscopy of Catalysts, B.S.H.Royce, S.J.McGovern, J.B.Benziger, American Laboratory, March 1985

IR Photoacoustic Spectroscopy of Silica and Aluminum Oxide, J.B.Benziger, S.J.McGovern, B.S.H.Royce, Catalyst Characterization Science, ACS Symposium Series No. 288, M.L.Deviney and J.L.Gland, Eds. p.449 (1985)

Surface Characterization of Supported Tungsten and Molybdenum Oxides by Infrared Spectroscopy, S.J.McGovern, B.S.H.Royce, J.B.Benziger, 189th ACS National Meeting, Miami Beach, FL, 1985

Cocurrent Downflow of Air and Water in a Two Dimensional Packed Column, G.Christensen, S.J.McGovern, S.Sundaresan, AIChE Journal, Vol. 32 (10) p. 1677 (1986)

Experimental and Kinetic Evaluation of Hydrotreating Catalysts, T.R.Kiliany, C.K.Lee, S.J.McGovern, AIChE Spring National Meeting, Orlando, FL, 1990

Process for Hydrotreating Catalytic Cracking Feedstocks, W.R.Derr,Jr, R.E.Holland, S.J.McGovern, M.P.Nicoletti, AIChE Spring National Meeting, Orlando FL, 1990

Improved Hydrocracker Temperature Control: Mobil Quench Zone Technology, S.J.McGovern, M.S.Sarli, D.W.Lewis, P.W.Snyder, NPRA Annual Meeting, San Antonio, TX, 1993

Ultra Low Sulfur Gasoline: Overview and Comparison of Gasoline Sulfur Reduction Technologies, S.J.McGovern and C.K.Lee, AIChE Spring National Meeting, Houston, Tx, 2001-11-14

“Clean” Diesel: Overview and Comparison of “Clean” Diesel Production Technologies, C.K.Lee and S.J.McGovern, AIChE Spring National Meeting, Houston, Tx, 2001

FCC Cyclone Design Considerations, S.J.McGovern, AIChE Spring Meeting, New Orleans, 2002

The Role of Trickle Bed Reactor Design in Meeting Future Clean Fuels Regulations, W.R.Derr,Jr., S.J.McGovern, C.K.Lee, World Refining, October 2002, Vol. 12, No. 8 page 30

Refinery Long Range Planning: Methodology for Evaluating Competing Technologies, S.J. McGovern, C.K. Lee, AIChE Spring National Meeting, New Orleans, LA, 2003

Diesel Strategy Study: Impacts of Future US Diesel Specifications Changes on Investments, Operating Costs, Hydrogen Requirements and Carbon Dioxide Emissions, S.J. McGovern, C.K. Lee, AIChE Spring National Meeting, New Orleans, LA, 2004

Hydrocracking Chemistry and Economics in a Clean Fuels Environment. S.J. McGovern, C.K. Lee, AIChE Spring National Meeting, New Orleans, LA, 2004

Underperformance of ULSD Units May Create Supply Problems in US, S.J.McGovern, C.K.Lee, J.A.Zagorski, Oila and Gas Journal, August 8, 2005

Options for Refining High Aromatic Streams, SJ McGovern, CK Lee, JA Zagorski, 2006 NPRA Annual Meeting, AM-06-08

Refiners have many options for converting high aromatic streams into ULSD, SJ MCGovern, CK Lee, JA Zagorski, Oil and Gas Journal, May 15, 2006

Economics, CO2 Balance and Energy Efficiency of Biofuels Production, SJ McGovern, CK Lee. NPRA Annual Meeting, March 2008. Paper AM-08-40

Study Compares Methods that Measure Hydrogen Use in Diesel Hydrotreaters, CK Lee, SJ McGovern, Luiz E. Magalhaes C. daSilva, Carlos A. Osowski, Oil and Gas Journal, October 13, 2008

Patents

US 6324895 Process for Determining the amount of erosive material entering a power recovery turbine, Chitnis; Girish K.; Freeman; Brent David; Lemon, Jr.; Edward A.; McGovern; Stephen J.; Mazzocato; Lisa

US 5681450 Reduced Chaos Cyclone Separation, -Chitnis, Girish K., McGovern, Stephen J., Schatz, Klaus W.

US5413696 Gasoline Upgrading Process, - Fletcher, David L., Hilbert, Timothy L., McGovern, Stephen J., Sarli, Michael S., Shih, Stuart S.

US5399258 Hydrocarbon Upgrading Process, - Fletcher, David L., Sarli, Michael S., Shih, Stuart S., McGovern, Stephen J., Diez, Douglas S., Deptford (NJ) US; Harandi, Moshen, N., Hilbert, Timothy L.

US5360532 Gasoline Upgrading Process, - Fletcher, David L., McGovern, Stephen J., Sauer, John E.

US5352354 Gasoline Upgrading Process, - Fletcher, David L., Hilbert, Timothy L., McGovern, Stephen J., Sarli, Michael S., Shih, Stuart S.

US5318690 Gasoline Upgrading Process, - Fletcher, David L., Hilbert, Timothy L., McGovern, Stephen J., Sauer, John E.

US4780193 Process for Hydrotreating Catalytic Cracking Feedstocks, - Derr, W. Rodman, Jr., Holland, Robert E., McGovern, Stephen J., Tracy, William J., III

US464046 Apparatus for Injecting Liquid Hydrocarbon Feed and Steam into a Catalytic Cracking Zone, - Krambeck, Frederick J., McGovern, Stephen J., Sauer, John E.

US4555328 Method and Apparatus for Injecting Liquid Hydrocarbon Feed and Steam into a Catalytic Cracking Zone, - Krambeck, Frederick J., McGovern, Stephen J., Sauer, John E.

US4421636 Inert Gas Enrichment in FCC Unit Regenerators, - Dolan, Michael J., McGovern, Stephen J., Owens, Peter J.

US4395325 Reducing Sulfur Trioxide Concentration in Regeneration Zone Flue Gas, - McGovern, Stephen J., Owens, Peter J., Dolan, Michael J.

US4370222 FCC Regeneration, - McGovern, Stephen J., Yeigh, John H., Jr.

US4176083 Separating Flue Gas from Regenerated Cracking Catalyst - McGovern, Stephen J., Schatz, Klaus W., Zrinscak, Fred S., Sr.

US4126539 Method And Arrangement Of Apparatus For Hydrogenating Hydrocarbons - Derr, Walter R., Jr., Gallagher, Lawrence E., Haddad, James H., McGovern, Stephen J., Schatz, Klaus W., Smith, Fritz A.

US4080397 Method For Upgrading Synthetic Oils Boiling Above Gasoline Boiling Material - Derr, Walter R., McClernon, Joseph R., McGovern, Stephen J., Smith, Fritz A.

US4059648 Method For Upgrading Synthetic Oils Boiling Above Gasoline Boiling Material, - Derr, Walter R., McClernon, Joseph R., McGovern, Stephen J., Smith, Fritz A.