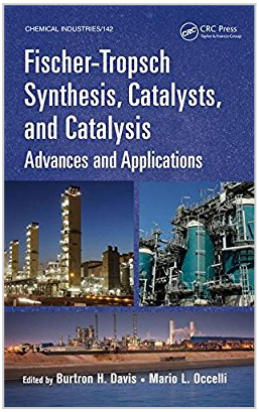

Fischer-Tropsch Synthesis, Catalysts, and Catalysis: Advances and Applications (Chemical Industries)

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With petroleum prices spiraling upward, making synthetic fuels?or "synfuels"?from coal, natural gas, and biomass has become more economically competitive. Advanced energy companies now focus exclusively on alternative fuels, and many oil companies have programs dedicated to developing synthetic fuels. The Fischer-Tropsch process, which uses a collection of chemical reactions to convert mixtures of carbon monoxide and hydrogen into liquid hydrocarbons, is the studied method of choice for producing synthetic petroleum substitutes.

Fischer-Tropsch Synthesis, Catalysts, and Catalysis: Advances and Applications began at a symposium held during the 248th American Chemical Society meeting, where high attendance demonstrated great interest in Fischer-Tropsch synthesis. The lively discussions that occurred led to the creation of this carefully constructed reference work. The contributors here have expanded and reorganized their presentations from the conference into thorough chapters that reflect the four key subject areas that dominated the presentations:

- Catalyst preparation and activation
- Catalyst activity and reaction mechanisms
- Catalyst characterization and related reactions
- Topics concerning commercializing the Fischer-Tropsch process

While describing advances and exploring the potential of the Fischer-Tropsch process in the future of synthetic fuels, the research also demonstrates that several issues remain in producing increasingly active catalysts and more efficient reactor design.

Covering recent developments in Fischer-Tropsch technology for renewable resources and green energy, this book is a significant contribution for researchers and practitioners concerned with the production of synthetic fuels. It explores new and sophisticated techniques while providing a look at the application of these advances to commercial processing conditions.

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Editorial Review

About the Author

Burtron H. Davis earned his PhD in physical chemistry from the University of Florida, Gainesville. He is responsible for catalysis, Fischer-Tropsch synthesis, and direct coal liquefaction research at the Center for Applied Energy Research, University of Kentucky, Lexington. He developed a program that involved both academic research and cooperative research with industry. He has developed a laboratory with extensive capability in the use of radioactive and stable isotopes in reaction mechanism studies and materials characterization. He has also developed research programs in Fischer-Tropsch synthesis, surface science studies, heterogeneous catalysis, materials science, organic analysis, ¼-ton-per-day direct coal liquefaction pilot plant operation, liquefaction mechanistic studies, clean gasoline reforming with superacid catalysts, and upgrading naphthas. He has held various offices and memberships in several professional societies, including the American Chemical Society, The Catalysis Society, and the Materials Research Society. He has received the H. H. Storch Award and is a fellow of the American Chemical Society. He is the author of more than 800 technical publications.

Mario L. Occelli came to the United States in 1963 on a Fulbright scholarship to study chemical engineering at Iowa State University, Ames, Iowa, where he earned a BS in chemical engineering and his PhD in physical chemistry. He spent his entire career researching the synthesis and characterization of microporous materials and their application in the preparation of fluid cracking catalysts and hydrocracking catalysts for the petrochemical and petroleum refining industry. While working at GULF, UNOCAL, and Georgia Tech Research Institute, his dual background in physical chemistry and chemical engineering allowed him to contribute to multidisciplinary research projects involving chemists, surface scientists, physicists, material scientists, and chemical engineers working in national and industrial laboratories and in academia. His work has been extensively published, he has presented papers and lectures at national and international meetings, and he holds 30 US patents. He currently works as an independent consultant.

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