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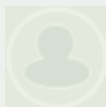
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JEFFERSON WILLIAM TESTER

Biography

Dr. Tester is the Croll Professor of Sustainable Energy Systems in the School of Chemical and Biomolecular Engineering at Cornell University. He also serves as Director of the Cornell Energy Institute and a Fellow in the Atkinson Center for a Sustainable Future. Prior to his appointment at Cornell in 2009, Dr. Tester was the H.P. Meissner Professor of Chemical Engineering at the Massachusetts Institute of Technology where he served as Director of MIT's Energy Laboratory (1989-2001) and Director of MIT's School of Chemical Engineering Practice (1980-1989). His research on renewable and conventional energy extraction and conversion and environmental control technologies has resulted in over 200 scientific publications and 10 co-authored books. Professor Tester is a fellow of the Royal Society of Chemistry and currently a member of the IPCC's Working Group on Renewable Energy Sources, and advisory boards of the National Renewable Energy Laboratory, the American Council of Renewable Energy, Idaho National Laboratory, and Los Alamos National Laboratory.



Jefferson William Tester

Dept: Chemical and Biomolecular Engineering

Title: The Croll Professorship of Sustainable Energy Systems

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Research Interests

Energy/Resource Related Problems -Advanced drilling technology using thermal spallation and fusion -Heat mining processes for geothermal energy extraction -Petroleum and geothermal reservoir engineering (chemical reaction and transport in fractured rock reservoirs) -Energy technology assessments and analysis -Gas hydrates for methane recovery

Environmental -Destruction of hazardous chemicals in supercritical water
-Aquifer contamination from migration of wastes -Supercritical fluids as reaction media for chemical synthesis -Carbon dioxide capture and sequestration includes (ocean- and land-based systems and gas hydrate formation and stability)

Applied Thermodynamics and Kinetics -Chemical kinetics in supercritical fluids -Molecular simulations of condensed matter -Properties of aqueous organic and electrolyte mixtures at high temperatures and pressures - Rock-water interactions in hydrothermal environments -Salt crystallization/dissolution phenomena in supercritical water

Teaching Interests

Energy systems analysis methods, renewable energy and fossil energy technologies, emphasis on applying quantitative methods using thermodynamic, kinetic and transport fundamentals in the context of scalable practical energy processes operating under environmental and economic constraints.

Selected Publications

- ▶ Carr, A. G., Jefferson William Tester. 2013. "Prediction of the solubility of quartz in salt solutions from 25 degrees C to 900 degrees C using the 3-parameter Non-Random Two-Liquid (NRTL) model." *Fluid Phase Equilibria* 337: 288-297.
- ▶ Sutter, D., D.B. Fox, B.J. Anderson, D.L. Koch, P.R. von Rohr, Jefferson William Tester. 2011. "Sustainable heat farming of geothermal systems: a case study of heat extraction and thermal recovery in a model EGS fractured reservoir." *Proceedings of the 36th Workshop on Geothermal Reservoir Engineering (SGP-TR-191)*.
- ▶ Tester, Jefferson William, D. L. Sills, V. Paramita, M. J. Franke, M. C. Johnson, T. M. Akabas, C. H. Greene. 2013. "Quantitative uncertainty analysis of life cycle assessment for algal biofuel production." *Env. Sci. Technol.* 47 (2): 687-694.
- ▶ Luterbacher, Jeremy S., Q. Chew, Yuan Li, Jefferson William Tester, Larry P. Walker. 2012. "Producing concentrated solutions of monosaccharides using biphasic CO₂-H₂O mixtures." *Energy & Environmental Science* (5): 6990-7000.
- ▶ Johnson, M. C., Jefferson William Tester. 2013. "Lipid transformation in hydrothermal processing of whole algal cells." *Industrial & Engineering Chemistry Research* 52 (32): 10988-10995.

[see more publications](#)

Selected Awards and Honors

- ▶ Excellence in Teaching Award (College of Engineering) 2013
- ▶ Special Achievement Award (Geothermal Resources Council (GRC)) 2011

- ▶ Fellow of the Royal Society of Chemistry 2010
- ▶ Outstanding Faculty Member Award (Massachusetts Institute of Technology) 2004
- ▶ Outstanding Faculty Member Award (Massachusetts Institute of Technology) 2001

Websites

- ▶ jeff-tester.cbe.cornell.edu
- ▶ energyinstitute.engineering.cornell.edu

Education

- ▶ BS (Chemical Engineering), Cornell University, 1966
- ▶ MS (Chemical Engineering), Cornell University, 1967
- ▶ Ph D (Chemical Engineering), Massachusetts Institute of Technology, 1971

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