Reversing Climate Change: Using Carbon Technology to Offset Carbon Emissions

Climate change is real, here, and potentially catastrophic in its effect. We argue that climate mitigation now requires not only emitting less greenhouse gas (GHG), but actually sources of negative carbon. We then present two technologies researched by our group, supertorrefiers (STRs) and molten salt breeder reactors (MSBRs), that taken together can result in a systematic lowering of GHG levels in the Earth's atmosphere. STRs have the potential of creating solid, liquid, and gaseous biofuels that are economically competitive with coal, petroleum, and natural gas. MSBRs can replace, over the long-term, the light water reactors in current usage with a walk-away safe, less expensive, more proliferation-resistant form of nuclear power, with acceptable solutions for the problems of high-level and low-level nuclear waste. Taken together, STRs and MSBRs allow a smooth and gradual transition away from fossil fuels while exploiting the storage, transportation, and power-generation infrastructures built up to support the fossil-fuel industry. If the biochar is buried rather than burned, the transition can occur in a manner, which improves, rather than degrades, the environment with increased use.

About Dr. Shu

Dr. Frank H. Shu is a University Professor Emeritus of University of California at Berkeley and San Diego and a Distinguished Research Fellow at the Academia Sinica in Taiwan. As one of the world's leading authorities in theoretical astrophysics and star formation, Dr. Shu has made paradigm-shifting contributions to human understanding of how astronomical structures such as stars and spiral galaxies form. In 2009, he retired and accepted a position as a member of the Science and Technology Advisory Group and as an Advisor on Energy to the Premier of Taiwan. He also Chairs the Advisory Committee of the Green Energy Laboratory of the Industrial Technology Research Institute (ITRI) and is a member of ITRI's Advanced Research Advisory Committee. Since 2009, he has devoted all his efforts at Academia Sinica and at ITRI to developing alternative sources of energy to replace the burning of fossil fuels in response to the growing crisis of global climate change.

3:00 pm - 4:00 pm | WEDNESDAY, OCT. 29, 2014
Guggenheim 101 - Lees-Kubota Lecture Hall

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