

RND Amphitheater

Energy and Environmental Technology Inventions

- Alternative and bio-fuels (JPL, Sunlaw, Stanford, G6)
- Solar Energy:
 - Photovoltaics (JPL, Sunlaw)
 - Power Tower (JPL, Sunlaw)
 - Heating and Cooling (JPL)
 - Solar Power Satellite (NASA/JPL)
- Oil and gas price prediction models (JPL, Sunlaw)
- Electric, hybrid and autonomous vehicles (JPL)
- Aeroderivative gas turbines in combined-cycle for electric utility baseload applications (Sunlaw with General Electric, and Stewart & Stevenson)
 - Aeroderivative gas turbines in combined-cycle for electric utility peaking applications
 - Hot Water Injection for Pollution Control and Power Enhancement (Sunlaw with General Electric, and Stewart & Stevenson)
 - Gas turbine combustor designs (Sunlaw with General Electric)
 - Hydrogen production, distribution and use in catalyst systems (Sunlaw)
 - Catalytic converters (Sunlaw)
 - Carbon capture (cement and sequestration) (Sunlaw, G6)
 - High temperature, high efficiency seals (including for use with hydrogen) (Sunlaw)
 - Water purification and desalination (Sunlaw)
- 1st of a kind Alternative Energy Financing (Sunlaw)
- 1st Force Majeur Policy for Alternative Energy with Lloyds of London/Adams Brothers (Sunlaw)

Patents issued:

- Three patents are for a method of making high-quality cement from the greenhouse gases and other pollutants from power plants.
- Three patents are for catalyst chemistry for ultra-low emissions from gas-fired power plants, and
- Two for mechanical systems for pollution control, including one that has been used for carbon capture.
- The ninth patent is for making electricity from the non-carbon parts of coal while simultaneously de-acidifying acid mine drainage.
- The tenth patent is for “The Walking Chair,” a medical assistive device I invented to help with my back problems.

Air Pollution Control Technology

- U.S. Patent #5,451,558
 - “Process for the Reaction and Absorption of Gaseous Air Pollutants, Apparatus Therefore and Method of Making the Same,” September 19, 1995.
- U.S. Patent #5,650,127
 - “NOx Removal Process,” July 22, 1997.
- U.S. Patent #5,607,650
 - “Apparatus for Removing Contaminants from Gaseous Stream,” March 4, 1997.
- U.S. Patent #5,665,321
 - “Process for the reaction and absorption of gaseous air pollutants, apparatus therefor and method.” September 9, 1997
- U.S. Patent #5,762,885
 - “Apparatus for Removing Contaminants from Gaseous Stream,” June 9, 1998.

Carbon Sequestration and Recycling as Cement

- U.S. Patent# 7,887,694 B2.
 - “Method of Sequestering CO₂.” Production of cement from seawater and CO₂ from powerplants and other sources. February 15, 2011
- U.S. Patent #8,333,944

- Methods of sequestering carbon dioxide (CO₂) are provided. Aspects of the methods include precipitating a storage stable carbon dioxide sequestering product from an alkaline-earth-metal-containing water and then disposing of the product, e.g., by placing the product in a disposal location or using the product as a component of a manufactured composition. December 18, 2012
- U.S. Patent #7,966,250
 - CO₂ commodity trading system and method: “A system and method of generating and trading a CO₂ commodity that is correlated to a quantified amount of CO₂ sequestered in a CO₂ sequestering product comprising a carbonate and/or a bicarbonate. The tradable commodity can be purchased or sold for use in managing CO₂.” June 21, 2011

Electricity from the non-carbon parts of coal while simultaneously de-acidifying acid mine drainage

- U.S. Patent# 7,883,802 B2;
 - “Systems and Methods for Electrochemical Power Generation,” February 8, 2011