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## High-Temperature Flash Treatment of CO<sub>2</sub> Sequestration Feedstock Materials

Coal is a fossil fuel that can be found in abundance on the earth. Unlike oil and gas, which is found in unstable countries, coal resources are found in politically and socially stable countries. Approximately 75% of the world's coal resources are located in the United States, China, and India. Currently, coal supplies 21% of the world's energy demands and reserves are expected to last 250 years. When coal is burned energy is released. Unfortunately, burning coal releases carbon dioxide gas into the atmosphere, which causes environmental damage. Presently, coal burning electrical generation plants collect carbon dioxide gasses for sequestration. These gasses are stored by pumping them deep into the earth in old oil wells. This storage method leaves many questions unanswered. The question that causes the most concern is whether these gases can escape the wells and get into the atmosphere. The storage method may fail because of fractures in the earth caused by earthquakes or by some other unknown caus.

Researchers at Arizona State University have developed a fast, low-cost method to sequester carbon dioxide gas. Serpentine minerals and carbon dioxide gas are flash heated to high temperatures. The process initiates a chemical reaction that releases water and the carbon dioxide gas is crystallized into a carbonate mineral. Unlike underground carbon dioxide storage that may release the gases into the atmosphere, this process disposes the gasses. The resulting carbonate is stable and environmentally inert.

### Potential Applications

- CO<sub>2</sub> sequestration for coal burning electricity generating power plants
- Industrial CO<sub>2</sub> sequestration
- Vehicular CO<sub>2</sub> emissions control

### Benefits and Advantages

- Lower Costs – Process acts fast in between 10 and 40 seconds reducing the amount of energy required to cause the reaction.
- More Protection – The process is a carbon dioxide disposal method and gases cannot be released into the atmosphere in the future.
- Retrofit – The innovation can be easily applied to existing equipment.

For more information about the inventor(s) and their research, please see [Dr. Andrew Chizmeshya's directory webpage](#)

