



Technology Available for License

Capping CO² Sequestration Formations by Inducing Biofilm Bacterial Growth

Biofilm grown in geological formations reduces hydraulic conductivity and can potentially be used to seal gas leaks.

Biofilm barriers in geological formations have been formed using a variety of bacterial species and conditions. Initial experiments were formed with an oilfield isolate of *Klebsiella oxytoca* under fermentative conditions and mesophilic temperatures. Barriers have been formed both in the laboratory and in field tests with *Pseudomonas fluorescens* under denitrifying conditions at low temperatures. For microbial enhanced oil recovery researchers have formed barriers with *Agrobacterium radiobacter*.

Subsurface bacteria grow at the elevated temperatures, salinities and pressures that are expected in supercritical CO² injection applications. The ability to grow bacteria in subsurface conditions can be used to develop biofilm barriers using the appropriate species of bacteria. Biofilm may be applied in a geological formation (man made or natural) using bacteria and nutrients to create a gas tight seal or augment a naturally occurring seal to gas leaks. Bacteria or biofilm may be applied in a geological formation to fix CO² and form a calcium carbonate scale to seal gas leakage.

Benefits

- Known technology to seal pores in geological formations
- Relatively easy and economical to apply and maintain
- Nonhazardous materials can be used

Technology Transfer and Development Status

A patent is pending and research is ongoing.

Contact for licensing or further details

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