Core-Shell Microstructure Proppants

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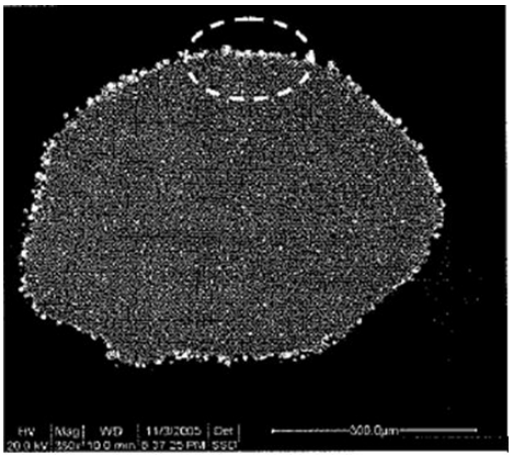

Proppant with Core-Shell Microstructure

Technology Summary

The disclosed invention is an improved proppant used to keep a hydraulic fracture open during/after the fracturing process. The proppant has a ceramic core and a metal or metal oxide outer shell. The present invention permits in-situ fabrication of ceramic aggregates/proppants with a core-shell microstructure. This complex microstructure allows for the specific tailoring of material properties such as specific gravity, thermal expansivity, and thermal conductivity. By controlling these properties, the present technology offers an alternative to existing proppant technologies and has many uses such as creating “proppants” in pore channels for hydrocarbon retrieval, to the creation of a permeable reactive barrier (PRB) in the environmental restoration of contaminated groundwater.

Application & Market Utility

Particulate ceramic materials are used as proppants in hydrocarbon recovery processes. These materials are injected into open cracks in rock structures in order to maintain the integrity of the structure during the extraction process. Such materials need to have high strength and chemical inertness, and should also have densities comparable to that of the carrier fluid. In addition, since these materials are used in very large amounts, their cost should be low. The present invention is protected by the U.S. 7,828,998 patent.

Next Steps

Seeking licensing opportunities.

TECHNOLOGY READINESS LEVEL 4-7

Seeking

Investment | Licensing | Research

Keywords

- proppant
- fracing
- hydrofracturing
- hydraulic fracturing

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