

1106-VG-1952      **Benjamin Jackson\*** ([jackson@math.montana.edu](mailto:jackson@math.montana.edu)), Montana State University, Department of Mathematical Sciences, 2-214 Wilson Hall, Bozeman, MT 59717-2400, and **James Connolly**, **Albert Parker**, **Isaac Klapper** and **Robin Gerlach**. *Estimating Parameters in a Bacterial Community Using Inverse Methods*. Preliminary report.

Microbially induced calcite precipitation (MICP) has potential applications in subsurface engineering. MICP takes place in complex systems which often contain communities of bacteria adhering to surfaces, called biofilms, in which mineralization rates are not well known. We seek to characterize these rates in a biofilm system by parameterizing a mathematical model using data from tube reactor experiments conducted at Montana State University's Center for Biofilm Engineering. We formulate a forward ODE model and then solve the inverse problem using basic Bayesian methods. Careful use of synthetic data demonstrates the validity of this approach which we then apply to lab data. (Received September 15, 2014)