

1126-35-336

**A J Meir\*** ([ajmeir@smu.edu](mailto:ajmeir@smu.edu)), Department of Mathematics, Southern Methodist University, Dallas, TX 75275, and **Y Cao** ([yzc0009@auburn.edu](mailto:yzc0009@auburn.edu)), Department of Mathematics and Statistics, Auburn University, Auburn, AL 36849. *On Some Nonlinear Problems in Poromechanics.*

Poromechanics is the science of energy, motion, and forces, and their effect on porous material and in particular the swelling and shrinking of fluid-saturated porous media. Modeling and predicting the mechanical behavior of fluid-infiltrated porous media is significant since many natural substances, for example, rocks, soils, clays, shales, biological tissues, and bones, as well as man-made materials, such as, foams, gels, concrete, water-solute drug carriers, and ceramics are all elastic porous materials (hence poroelastic).

After a brief overview I will describe some nonlinear problems in poroelasticity and their mathematical analysis. I will also describe finite element based numerical methods for efficiently and accurately approximating solutions of (nonlinear) model problems in poroelasticity, and the available a-priori error estimates. (Received January 17, 2017)