



## SYSTEMS AND METHODS FOR DETERMINING MECHANICAL PROPERTIES IN SUBSURFACE FORMATIONS

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### The Invention

A UW-Madison researcher has developed a method for predicting subsurface mechanical properties using distributed strain measurements obtained from applied perturbations. The method relies on model characteristics generated from previously derived strain data in combination with wellbore perturbations to predict elastic properties and anisotropy. In practice, the method would be implemented in a strain sensing system, including a controller, fiber optic cable, a light emitter, and a detector. The system could be deployed in an wellbore, including integration of the fiber optic cable in the casing. Once deployed, a signal (i.e., applied stress or perturbation) is applied and the resultant signals are received by the detector (i.e. sensed strain). The sensed strain, in combination with the applied stress, is used to determine mechanical properties of the formation extending along the wellbore. Such information can be useful in determining the potential productivity of the site.

### Key Benefits

- Potential to provide continuous, whole well monitoring (vs. discrete, single interval readings currently utilized)

#### Tech Fields

- [Analytical Instrumentation, Methods & Materials : Optics](#)
- [Analytical Instrumentation, Methods & Materials : Sensors](#)

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