

ABSTRACT

This compilation lists abstracts of papers, internal reports, and talks presented during 1975 at national and international meetings by members of the Geoscience and Engineering Section, Inorganic Materials Division, Chemistry and Materials Science Department, Lawrence Livermore Laboratory. Titles of talks at university and local meetings are also listed when available. The subjects range from the in situ retorting of coal to the temperature profile of the moon. A subject classification is included.

ABEY,^{*} A. E., A theoretical model for the pressure-volume relationship of tuffs containing various amounts of water, Eos Trans. AGU 56, 441 (1975). [UCRL-76602, Abstract]

This model assumes a distribution of spherical pores, where the number of pores within a range of allowable radii is inversely proportional to the volume of the pores. The distribution of pore separations is assumed to be independent of pore size over the range allowed. The reduced radius (R) of a pore containing air and with separation (H) is related to the applied pressure (P) through $R = 2\tau H/P$, where τ is the shear strength of the matrix material. When the pore is filled with water only, the reduced radius is governed by the pressure-volume relationship of the water in the pore through the pressure transmitted by the matrix material. The total volume change of the tuff is the sum of the volume changes of the various pores in the distribution plus the volume change of the matrix material. The predictions of the model compare well with experimental results for several tuffs.

ABEY, A. E., and Bonner, B. P., Elastic constants of polycrystalline α -uranium, J. Appl. Phys. 46, 1427-28 (1975). [UCRL-75850, Preprint]

The elastic constants of polycrystalline α -uranium were determined as a function of pressure P. Measurements were made in the range from 100 kPa to 1.8 GPa. The initial Lamé constant λ is 53 GPa, the initial shear modulus μ

* Names of senior authors appear in full caps. Abstracts follow the entry for the senior author, unless the latter is not a member of the Geoscience and Engineering Section. In that case, the abstract follows the entry for the group member whose name comes first alphabetically.