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Glass Relaxation and the Dielectric Constant Of Moist, Porous Rock ARTHUR H THOMPSON — The low-frequency, dielectric constants of moist, porous rocks are important properties related to hydrocarbon saturation and mineral exploration. Numerous theoretical and experimental studies have attempted to explain the unusually large values of the dielectric constant at frequencies below 1000 Hz. This study tests the hypothesis that a disordered arrangement of dynamically-coupled, electrochemical dipoles in the pore fluids explains the dielectric constant. The dynamic coupling leads to relaxation times on the order of tens of minutes and divergent dielectric constants as frequency approaches zero. Temperature-dependent relaxation measurements test and support the hypothesis.

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