# FORMATION AND PALEOMAGNETIC IMPLICATIONS OF GREIGITE IN THE GUTINGKENG MUDSTONE, SOUTHWESTERN TAIWAN

1JIANG, Wei-Teh., 2HORNG, Chorng-Shern and 3PEACOR, Donald R. 1National Cheng Kung Univ., Dept. Earth Sci., Tainan, Taiwan; 2Academia Sinica, Inst. Earth Sci., Taipei, Taiwan; 3Univ. Michigan, Dept. Geological Sci., Ann Arbor, U. S. A.

The formation mechanism of greigite in a mudstone from the Lower Gutingkeng Formation, SW Taiwan was investigated, using SEM, TEM, and XRD techniques, to determine the cause of a paleomagnetic polarity anomaly among a regionally zonal distribution pattern of magnetic minerals.SEM data show that greigite occurs in three modes of occurrence, including (1) aggregates of submicrometer crystals in undistorted iron sulfide-dominated nodules (submillimeter to several millimeters in diameter) within and around which pyrite and silicate grains are embayed by greigite, with corroded edges, (2) small grains (1 £gm) dispersed in the matrix and locally forming arrays along phyllosilicate (001) cleavages, and (3) fine-grained crystals (~0.1 £gm) forming framboids or aggregates within pyrite framboids. TEM observation indicates that the sulfide nodules consist of (a) subhedral to euhedral pyrite crystals (¡Ó discrete pyrrhotite crystals), and (b) aggregates of very fine-grained (~50 nm) magnetite and pyrrhotite (originally greigite by XRD) occurring along corroded edges of and locally as veinlets intruding into pyrite crystals. The data collectively suggest that the greigite was formed as a diagenetic alteration product of pyrite via dissolution-neoformation processes, and consequently its magnetic signals are incompatible with sedimentary paleomagnetic polarities.