Pyrite microtexture in sediment surface: examples from Sagami trough and Japan Sea

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Growth process of authigenic pyrite in deep-sea surface sediments was inferred from the detailed observation by scanning electron microscope and energy dispersive spectrometry. At the initial stage of growth, nuclei of spherical pyrite approximately 1 micronmeter in diameter are synthesized. They are aggregated to form loose framboids of 5-10 micronmeters in size. The size of the nuclei increases as their shapes change from spherical to angular, or euhedral. In the following stage, the framboids precipitate gravitationally to form the geopetal fabric in the pores of sediments. The pores are successively filled with the framboids to form pyrite nodules, first half-filled and later fully-filled with framboids. Finally, the framboids are covered with phosphorus filamentous materials and cemented together to form a pyrite micronodule.