Authigenic minerals in both sides of redox-barrier Eh in the seas

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Authigenic minerals in the 16-een environments with different vertical position of redox-barrier Eh in the Atlantic ocean and Mediterranean, Black and Baltic Seas were studied.

The vertical position of redox-barrier varies in limits of 2100 m above the sea bottom (Black Sea) to10 m beneath the sea bottom surface (in the deep basins of the ocean). The position of redox- barrier is stable in time. Only in the Baltic Sea deeps it is periodical.

The colloidal and hard hydroxide particles of Fe and Mn are forming above the redox-barrier in the water column (the contents of Fe and Mn are increasing up to 30 and 50 % respectively). There is gravitational and diffusional exchange by elements on redox-barrier ("perpetum mobile"). Rhodochrosite, pyrite, marcazite, melnikovite, alabandine, siderite, vivianate and barite are forming in the sediments below the redox-barrier level in the Baltic Sea. The content of Mn in the microlaminated muds is increasing up to 13-17% or up to 26-30 % of $MnCO_3$. Round and flat Mn nodules and Fe-Mn crusts are forming above the redox-barrier level.

Mn and Fe hydroxides, Fe sulphides sometimes rhodochrosite occur in the ocean bottom sediments. Authigenic phosphates (apatite, francolite, collophane) occur in the sediments of the near-shore upwelling areas. Shamosite, hydrogëtite, siderite, glauconite were studied in the sediments of near-mouths areas in the West African shelf.

Gypsum and strontianate occur in the muds of Bannock Basin.

The map of authigenic minerals distribution, the maps of Fe, Mn and other elements distribution, their absolute masses and rates of accumulation in the sediments of Atlantic ocean were compiled.

The models of Mn and Fe ores formation in the sea are prepared.