

## Evolutionary morphological row of natural graphite

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Study of graphite crystal morphology in different geological situations of the Ukrainian Shield makes possible to distinguish six morphological types of natural graphite and construct the united evolutionary morphological row: fine-platy pinacoidal crystals (1)→platy prismatic-pinacoidal crystals (2)→pseudo-obtuse-dipyramidal (lens-shaped) crystals (3)→isometric rod-like prismatic-pinacoidal and pinacoidal-dipyramidal crystals (4)→spherulitic aggregates (5)→close-grained massive aggregates (6). The described row is characterized by successive gradual changing of graphite features: the habit of graphite crystal changes from scaly and plate (type 1, 2) throughout isometric (type 3, 4) to sharply elongated on C-axis (type 5). The mechanism of graphite crystal growth changes in sequence spiral (1) – layered tangential and spiral (2) – spiral (conical) and polycentric microblock (3) – polycentric microblock (4) – normal dendritic (antiskeleton) (5) – normal isometric (6). As determined by X-ray, mean crystalline size  $L_{c(002)}$  decreases from 110 to 56 nm, and percentage of rhombohedral modification Rh increases from 7.7 to 26% from type 1 to 6. Because the order of morphology types of graphite change is constant, this morphological graphite row is universal despite the fact that the trend of its changing is different in diverse graphite occurrences. Thus, morphological types of graphite in contact reactional rocks change in sequence 6-5-4-3-2-1, in pegmatites – 4-3-2, in magmatic rocks (anorthosites) – 2-3-4-5, in retrograde metamorphic zones – 1-2-3-4. The degree of oversaturation of minerogenic fluid determines the morphology and properties of graphite crystals.