



## **Petrographic analysis of metamorphic strata of the Tatarstan Arch's crystalline basement, Eastern Russian Plate**

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The crystalline basement of the eastern Russian Plate consists of structurally complex, dislocated, high-grade metamorphic sequences of granulite and amphibolite facies. This complex structure was repeatedly metamorphosed under tectonic stresses of various orientations. Dynamic impacts that occurred during the formation of the crystalline basement have been reconstructed by the petrofabric orientation analysis of minerals indicating tectonic stress, such as quartz and micas (biotite).

This analysis has been performed on oriented thin sections of core samples from deep and ultra-deep wells. The performed studies indicate that the dislocated crystalline basement, despite its complex structure, was largely formed by subhorizontal tectonic stresses detected by measuring the orientation of the axes of the quartz optical indicatrix using a microscopic theodolite table to trace these axes on a stereographic projection in the core's coordinates. Studying the orientation of biotite's cleavage planes has produced similar results.

Borehole data allows the conclusion that crystalline basement rocks in this region were all under common subhorizontal stress during the final metamorphic stages, which produced the observed orientation of the indicator minerals. The performed studies indicate a major role of horizontal tectonic stresses in the formation and development of the crystalline basement of the eastern Russian Plate.