

## **THE FLUID INCLUSIONS IN BIRON SYNTHETIC EMERALD: INDICATION OF UNUSUAL HYDROTHERMAL SYNTHESIS TECHNIQUE**

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Biron (Australia) and Tairus (Novosibirsk, Russia) synthetic emeralds are the major hydrothermal synthetic gemstones in the world market. Many authors emphasized that Biron synthetic emerald (BSE) differs in some properties from natural emeralds and Russian hydrothermally grown ones. Combination of Cr with V and Cl is most specific feature of BSE. Its properties allow to suggest that it is produced by technique, which is different from known ones (Nassau, 1980; Klyakhin et al, 1981). We found that BSE contains fluid inclusions which are unusual both for natural and synthetic emeralds. They have common shape but differs from inclusions in Tairus synthetic emeralds in overall appearance and phase behavior under heating and freezing. All of the inclusions consist of the two phases – transparent liquid and dark bubble. Heating and crushing experiments show that the dark bubble is another liquid phase rather than gas.  $^1\text{H}$  NMR analyses confirm that this phase is a hydrocarbon liquid. The transparent liquid appear to be water solution of alkaline chlorides. Hydrocarbon fluid inclusions are a good feature for distinction BSE from natural and other synthetic counterparts. Synthesis of emerald in a medium, containing hydrocarbon substances is important to understand the natural processes of emerald formation in the presence of organic matter (columbian emeralds for example).