Synthetic gem stones.

SUCHKOVA E.M., POLANSKY E.V., YAROZKAYA E.G.
VNIISIMS, ALEXANDROV, RUSSIA.

There were studied the geological conditions of gem stones origin. Using the model test method of natural conditions VNIISIMS scientists have developed the synthesis technology for the absolute analogues of natural gem stones. Jewelry varieties of quartz: amethyst, ametrine, citrine, rock crystal, pink quartz, smoky quartz, morion and also malachite, precious opal, turquoise belong to them. They are identical to the natural gem stones by their gemmological features.

Using modifications of the synthesis parameters and physics-chemical effects we have developed the jewelry varieties of quartz having new gemmological features which are absent or rare occurred in nature (blue-perunite, green-prasiolite, opalescencing quartz, bicolor one – green-yellow, brown-green).

We use the method of melting to grow crystals partially similar to natural minerals or have no analogues in nature such as YAG, fianite ("cubic zirconia"). Nowadays new varieties of cubic zirconia: black, "pearl", polychrome (cherry-purple) become features.

The advantages of all synthetic crystals – bright, exclusive colors, transparency, large sizes, strength, wear resistance – make them as perspective materials for many fields of the decorative applied arts: apartment and office design, religious attributes, fashion etc.