

## DOCTORED SYNTHETIC SAPPHIRE

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Prima facie glance can be futile, a stone having coarse skin surface with mother rock attached gives the appearance of a perfect mined crystal.



Synthetic Sapphire boule, view from different directions.

IGI-GTL, Delhi received one unfaceted blue stone with attached pale brown color mother rock. Stone was having coarse skin surface, not transparent enough to allow inside view of the stone. Curve surface of the crystal, lacking the usual crystal faces and growth markings/features raised the suspicion. Presuming the stone to be of secondary source (mined from river bed) was also not possible. The stones collected from river bed although have rounded surface with coarse skin lacking natural growth marks, but such stones are in pebble form and don't carry mother rock, as mother rock gets washed away during its journey from its primary deposit to river bed, from where they are finally collected or mined.



Pale brown material attached with stone. Left Image: Inside view of the stone was not very clear. Right image: Few drops of water worked as pseudo polish enabling inside view. Notice Gas bubbles and grains of some colourless mineral.



Pale brown material attached with stone. Left Image: Inside view of the stone was not very clear. Right image: Few drops of water worked as psuedo polish enabling inside view. Notice Gas bubbles and grains of some colourless mineral.

Under the high magnification pale brown material attached with the stone was found unnatural. Attached material was found as the mixture of unknown grains of minerals, probably quartz, bind with some unknown resin or polymer like material. As surface of the material attached with stone was coarse to allow inside view, pseudo window was created by applying water drops on its surface. Drop of water over the unpolished and translucent surface worked like false polish and inside view became possible.

Under the high magnification through the pseudo polish over the material resembling mother rock, attached with the stone, gas bubbles were observed in the resin/polymer which was used to bind colorless mineral particles.



Under transmitted light, thick Curve Bands and Gas Bubbles were evident after psuedo polishing by water drops.

As surface of the blue stone was also coarse to see inside, pseudo polish was done by applying water droplets on the stone's surface. Through the pseudo window, cluster of

gas bubbles and curved color bands were found just under the surface, confirming the stone to be of synthetic origin.



Bunch of round and bullet like Gas Bubbles in Doctored Synthetic Sapphire, evident after applying Pseudo polish.



Junction plane of Synthetic Sapphire and fake mother rock, appearing like deliberately pasted material.

To find the stone's identity, as general gemological readings like R.I and S.G. were not possible, IR spectra of stone was taken in Fingerprint region, confirming the stone to be Sapphire.

All the gemological tests performed on the stone and high magnification analysis by applying pseudo polishing, blue stone was confirmed as Synthetic Sapphire, doctored to imitate rough of Natural Blue Sapphire.

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