

Additional photos to accompany the article:

Bui T.N., Deliousi K., Malik T.K. and De Corte K., 2015. From exsolution to 'gold sheen': A new variety of corundum. *Journal of Gemmology*, **34**(8), 678–691, <http://dx.doi.org/10.15506/JoG.2015.34.8.678>.

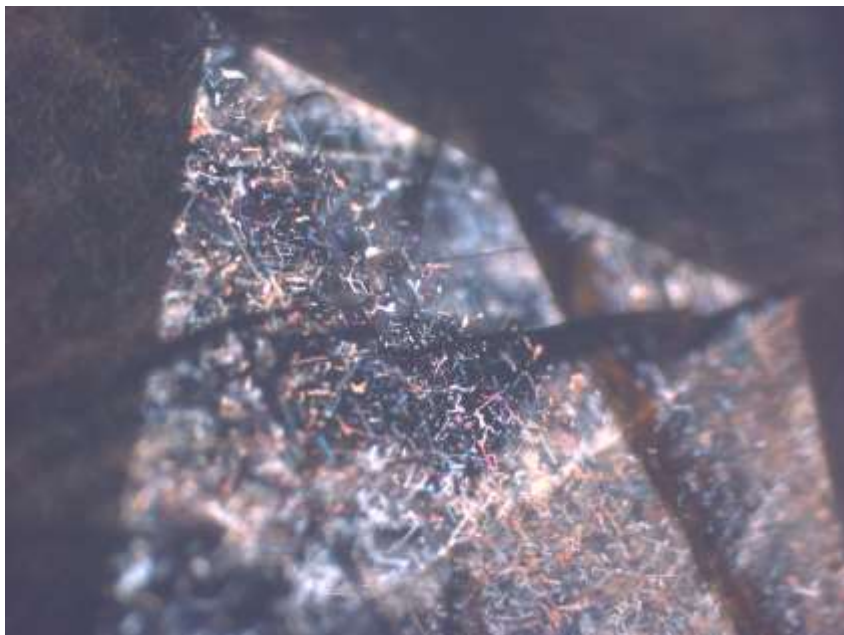


Figure DD-1: The needle and platelet inclusions in a gold-sheen sapphire show various colours due to thin-film interference in this image taken with oblique illumination. The thin-film phenomenon is due to their nanometre-scale thickness. Photomicrograph by K. Deliousi using brightfield illumination; magnified 40x, field of view 1.60 x 2.15 mm.

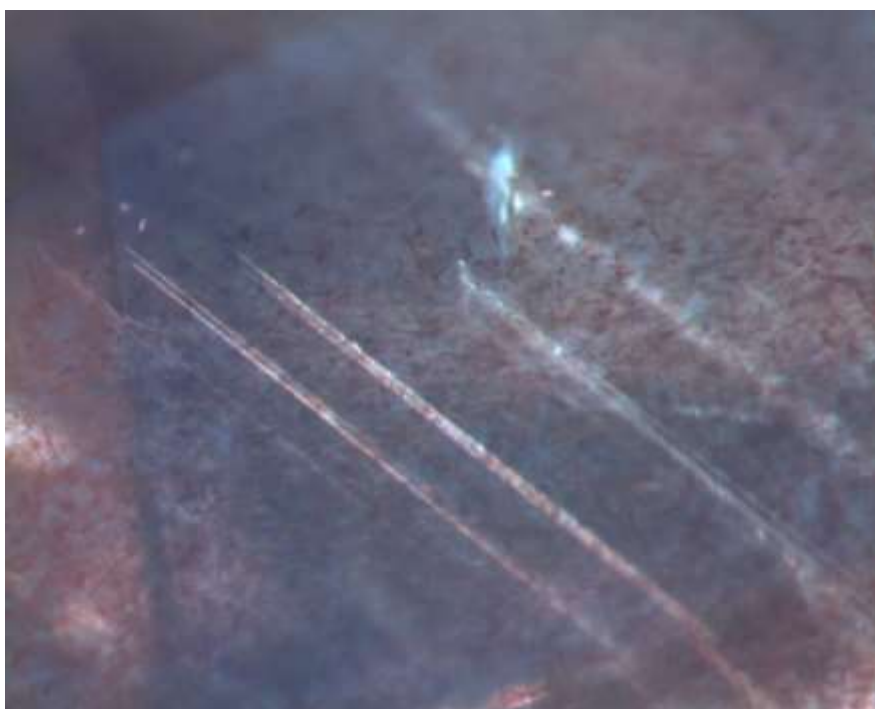


Figure DD-2: Long white needles occur along twin planes in the gold-sheen sapphires. They often appear in pairs and show a large aspect ratio. Photomicrograph by T. N. Bui using darkfield illumination; magnified 60x, field of view 2.21 x 1.77 mm.

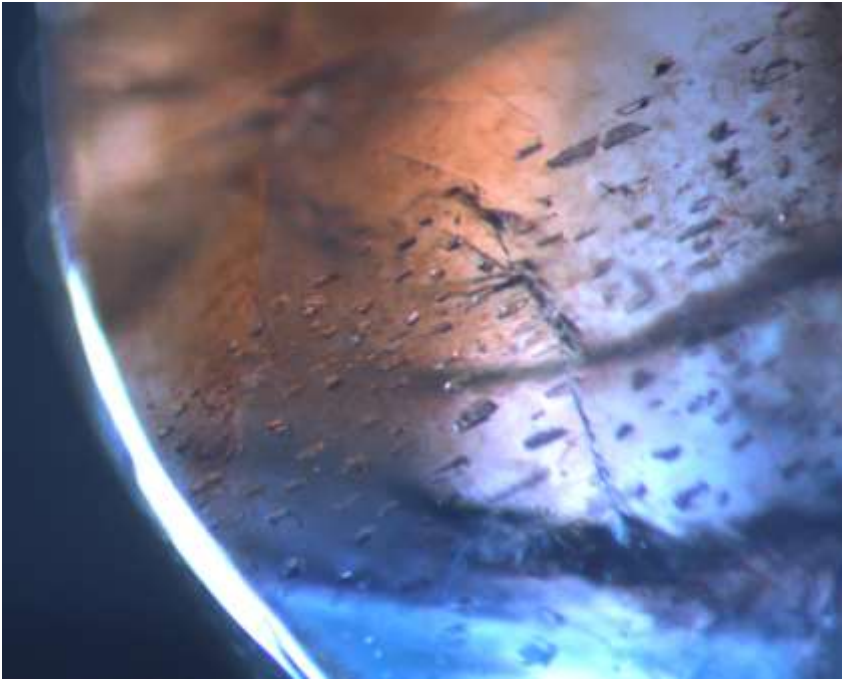


Figure DD-3: The planar arrangement of the negative crystals in this gold-sheen sapphire defines the shape of a healed fracture. Most of the negative crystals exhibit angular shapes that reflect the crystal structure of the corundum host. Photomicrograph by T. N. Bui using darkfield illumination; magnified 60x, field of view 2.21 x 1.77 mm.



Figure DD-4: Needles/platelets and negative crystals are shown in this image of a gold-sheen sapphire. Photomicrograph by T. N. Bui using brightfield illumination; magnified 50x, field of view 1.0 x 1.3 mm.

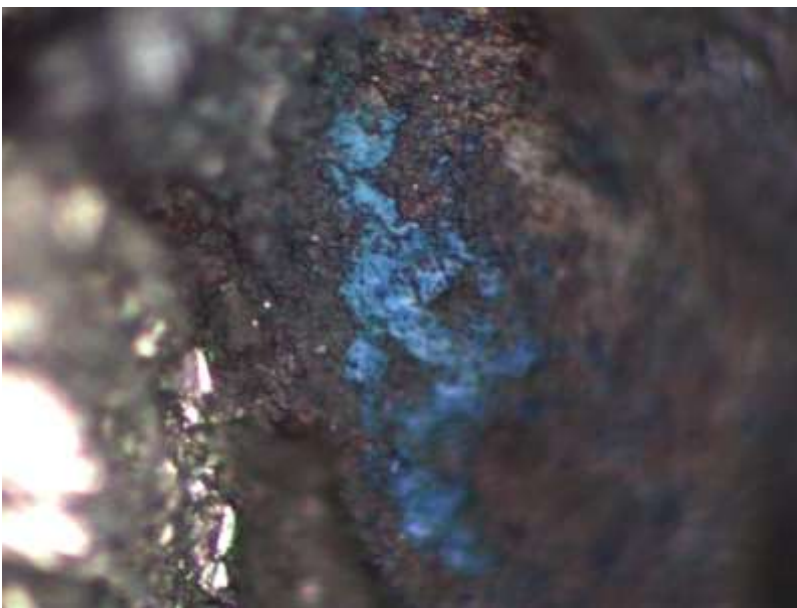
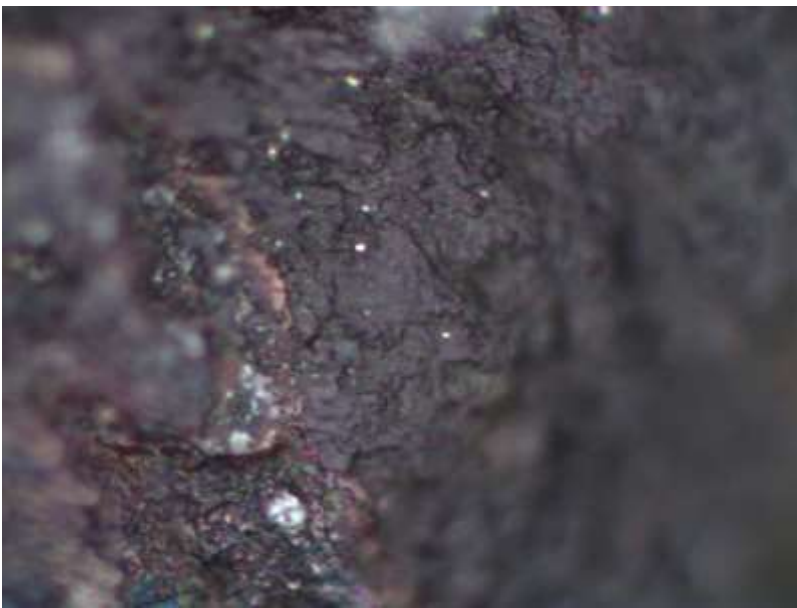
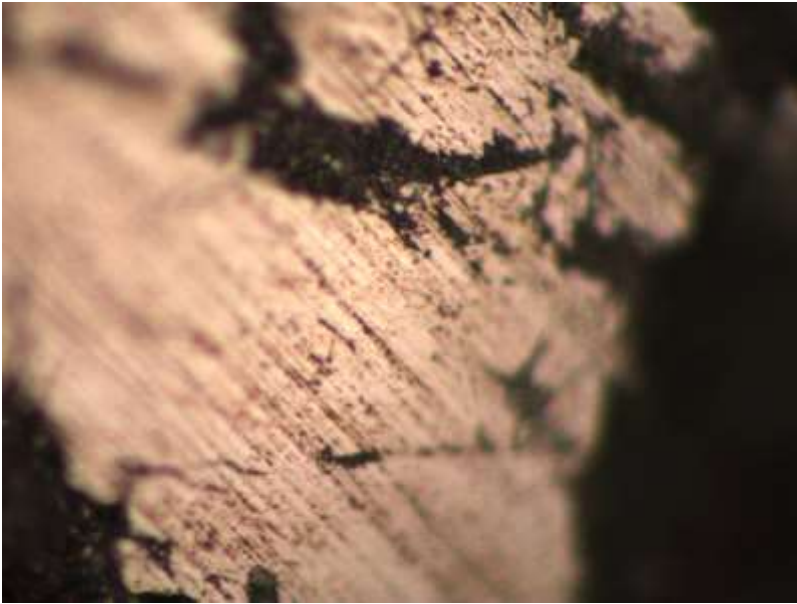


Figure DD-5: Black inclusions showing various appearances in the gold-sheen sapphires were identified by Raman spectroscopy as pyrite (top), baryte (middle) and covellite (bottom). Photomicrographs by T. N. Bui, brightfield illumination; magnified 500x, field of view 120 x 160 μm .

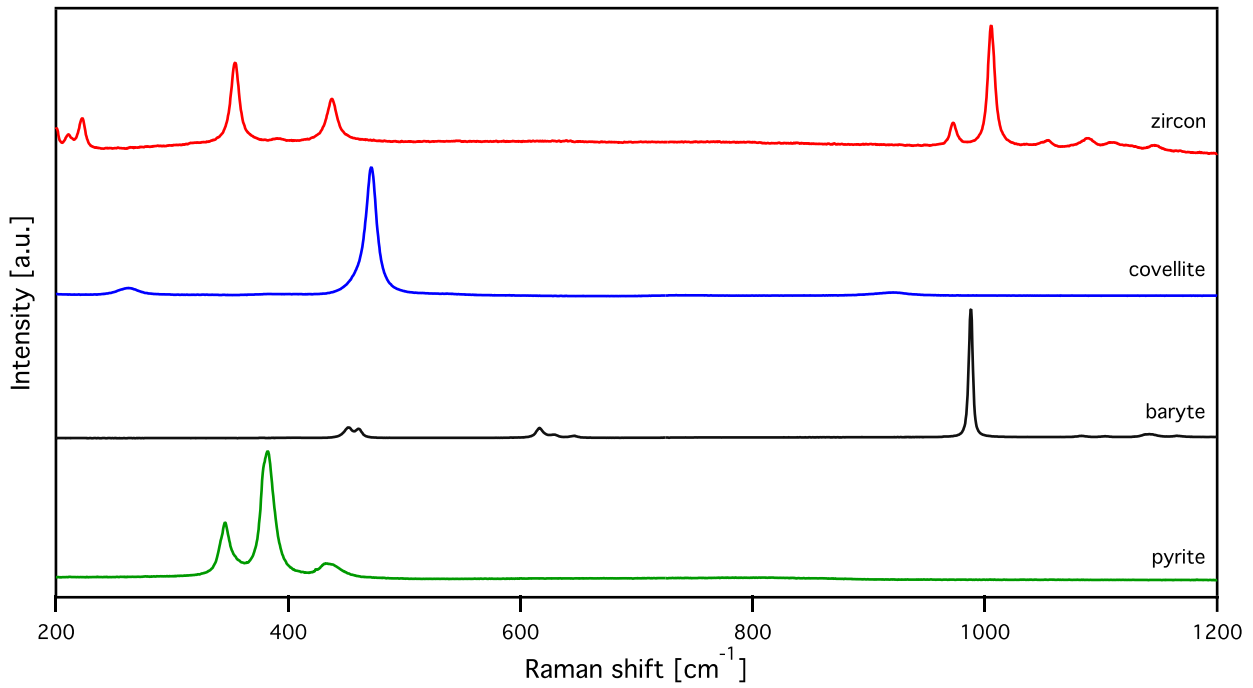


Figure DD-6: Raman spectra of various surface-reaching inclusions in the sapphires (not contributing to the gold sheen) are shown here. Pyrite, baryte and covellite formed opaque black inclusions, while zircon appeared transparent pinkish brown.

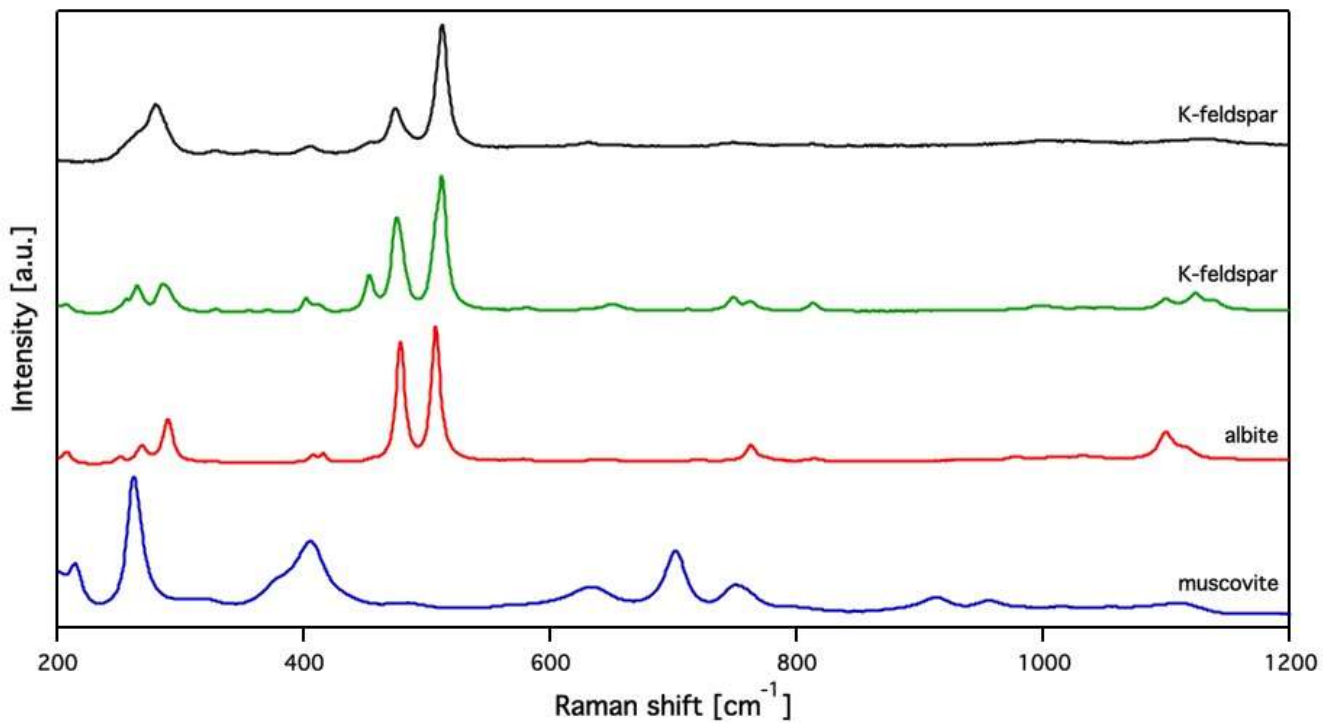


Figure DD-7: Raman spectra of colourless and transparent surface-reaching inclusions in the gold-sheen sapphires identified the presence of muscovite, albite and K-feldspar.



Figure DD-8: This stack of five disks and three spheres of neodymium-iron-boron magnets, with a maximum energy product of 42 MGOe, attracts four samples of gold-sheen sapphire that contain large surface-reaching inclusions of magnetite. The two faceted stones (top and bottom) weigh 1.56 and 2.91 ct, and the two cabochons weigh 5.52 and 8.84 ct. The magnetite is easily visible in the two cabochons as silvery grey areas. Photo by T. N. Bui.