



Top: Faceted rubies from Montepuez, Mozambique. The biggest stone is 5 carats. Left: Inclusion scenery in a Montepuez ruby, with small crystals of amphibole, zircon and rutile dust. Magn. 20x

H.A. Hänni, SSEF

New rubies from Montepuez, Mozambique

The SSEF Laboratory came across good faceted rubies from a new source in northeastern Mozambique a few months ago. Prof H.A. Hänni, research associate at the SSEF Swiss Gemmological Institute, told *JNA* about the deposit and its salient features.

"In July 2009, the first rough samples from a new source of ruby in NE Mozambique, from Werner Spaltenstein (Chantaburi), a rough gemstones buyer in East Africa, reached the lab. The deposit lies in weathered rock and in alluvial placers about 25km from Montepuez, south of Cabo Delgado," said Prof Hänni, adding that the colour of the stones covers pink to saturated red, and some purplish tones.

Listing the features of the stones, he said: "The material appears often in tabular shape of usually broken pieces. Transparency of the stones is good to translucent, usually due to twinning. Sizes are reported

up to 50g in rough. Clear faceted stones may reach 5 to 6 carats."

In order to characterise the new material and investigate the differences compared with rubies from other sources, six small samples were subjected to preliminary analysis. The results said that the inclusions contained twin lamellae and intersection lines, and fissures were often filled with iron oxide. Mineral inclusions were frequent and consisted usually of corroded crystals, rhombohedrally shaped negative crystals with polyphase inclusions and subtle precipitations of white rutile in flakes. Silk in fine bands or hexagonal patterns was seen in some stones. "The inclusions scenery is thus very similar to that of Burmese Mogok-type rubies. Roundish zircons and colourless to greenish amphibole grains were both identified with Raman spectroscopy," added Prof Hänni.

An absorption spectrum was recorded from a sample of

"Burmese looking" character, and the trace of the curve is typical for ruby with some iron. The cut off in the UV end was at 305 nm, Prof Hänni noted. "While our samples were natural and unheated, we expect the stones with more fissures and twinning features to be heated with borax or even with lead glass."

The latest research news is that the geological frame of Montepuez deposit is very similar to that of Winza (Tanzania) from where we have seen excellent large and pure rubies 10 carats and up. The genetic type of the rubies is of again amphibolite rock with kyanite as an accessory mineral. The co-existence of these three minerals allows quite a good estimation of pressure and temperature during formation, which is about about 9.5 kBar/650°C of this metamorphic formation. However, crystal shapes of the rough include more tabular and prismatic crystals, added Prof Hänni. *JNA*