News from the SSEF 2018:

On a colourful journey to exceptional gems and pearls

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Recently in the spotlight

Gem Deposits in Ethiopia

Recently in the spotlight

Sapphires from northern Ethiopia

Ethiopian sapphires show features typical for sapphires from basaltic origin.
Recently in the spotlight

...and from Madagascar

U-Pb age dating may provide in certain cases important information about gemstone formation (and origin).

Bemainty near Ambatondrazaka, an important new source of high quality blue sapphire but also other coloured corundum varieties.
Recently in the spotlight

**Fancy Sapphires from Ambatondrazaka, Madagascar**

Usually, these new fancy coloured sapphires from Ambatondrazaka are very pure with a very regular milky banding and few fine dispersed particles only.

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Research

**Fancy Sapphires with unstable Padparadscha-like colour**

After 5 minutes “activation” using a UV lamp the colour has considerably changed. But unfortunately this new colour will slowly fade again to pink in the coming few weeks...
Fancy Sapphires with unstable Padparadscha-like colour

before testing  after 5 minutes LWUV  after fading test

The case of yellow sapphires with unstable colour

before fading test  after fading test  after LWUV exposure

18 ct yellow sapphire with unstable (fading) colour
The case of yellow sapphires with unstable colour

Seven types of yellow colour cause in corundum:
1) Natural stable colour centre
2) Natural or laboratory-irradiated fading colour centre
3) Natural iron-related stable colour
4) Heat-developed stable yellow colour
5) Diffusion related “additive” colour
6) Synthetic with impurity-caused colour (e.g. nickel)
7) Synthetic with irradiated fading colour centre

Research

Fancy Sapphires with unstable Padparadscha-like colour

Since mid 2017, SSEF applies colour stability test on padparadscha sapphires!

The colour of the stones are analysed before and after UV activation and fading test to determine their colour stability or instability!

In case the tested stone shows a distinct shift, SSEF will not identify these stones as padparadscha, but as fancy sapphire, adding a comment (and explanation letter) about their unstable colour.
Research

…but not all Padparadscha’s are unstable

Series of “padparadscha” sapphires from Madagascar (mostly ilakaka) after fading (initial stage) and after UV activation.

Most do show a weak colour shift, but remain in the padparadscha colour field!

Flame fusion synthetic corundum

…and not all Padparadscha’s are real gems

Flame fusion (Verneuil) synthetic corundum coloured by traces of chromium and nickel!
Three cases of Padparadscha-like colours

From our studies we can separate three colour stability cases in corundum with padparadscha-like colour involving yellow colour centres (type 1 and 2 after Nassau):

A) Stones with stable pinkish orange colour as a result of chromium traces and a stable yellow colour centre. If fitting in colour and saturation, they will be identified by SSEF as padparadscha.

B) Stones with only weak colour shift by UV activation or fading test, owing their pinkish orange colour a mix of chromium traces and predominantly a stable yellow colour centre with only minor contribution by an unstable yellow colour centre. As long as the colour after UV activation and fading test fits, they will be still called padparadscha on SSEF reports.

C) Stones with a distinct colour shift from pink (stable colour) to pinkish orange (unstable), owing their colour a mix of chromium traces and predominately an unstable yellow colour centre. These stones are not qualifying at SSEF to be called padparadscha, but will be identified as fancy sapphires with a comment about their unstable colour property.

Low-T heating of Mozambique rubies

Recently we see more rubies from Mozambique which have undergone a low-T heat treatment (e.g. 800 °C), presumably applied to slightly shift the colour to a more attractive red hue.

Glass residue at girdle (left) and atoll-like structures in these two low-T heated rubies from Mozambique.

In many cases, the inclusions in these rubies are not or only very slightly altered by this low-T heating. It is thus quite challenging for gemmologist to detect such heating in comparison to rubies classically heated at about 1400 °C.
Treatment issue
Low-T heating of Mozambique rubies

Clarity modification in gems
Fissure filling in Ruby and other Gems
Clarity modification in gems

Oil/Wax Fissure filling

SSEF is disclosing fissure fillings in any gemstone based on international standards (LMHC) and our SSEF emerald wording policy.

Quantification: minor, moderate, significant
Identification: (coloured) oil, wax, artificial resin

Please remind:
Rubies, especially unheated ones from marble deposits such as Mogok are quite often and traditionally filled with oil or wax.

Any gemstone with fissures can be filled with oil or other filler to enhance/modify its clarity!

Artificial resin in ruby fissures

Recently encountered series of Burmese rubies (Mogok) with artificial resin in fissures!

www.ssef.ch/artificial-resin-in-ruby/

We hope (and urge the trade to take action) that this new treatment is not spoiling the ruby trade in the future.
Paraiba Tourmaline

Heated and fissure filled with artificial resin

Purple flash effects along fissure filled with artificial resin

Jadeite Jade

Rare collector stones

Glued
Disclosure and wording

Emerald

1) Emeralds with no fissures (very rare):
No indications of clarity modification at the time of testing
No fissures observed in this emerald

2) Emeralds with fissures, but without any clarity modification by a fissure filling:
No indications of clarity modification in fissures at the time of testing.
This is to express that this emerald contains fissures, which should be eye-visible even to an untrained observer.
Any such emerald may be refilled at any time after we have issued the report. We therefore strongly urge our clients to have such emeralds rechecked before buying the gemstone, especially if the report is not a very recent one and if the emerald looks very clean without any visible fissures.

3) Emeralds with fissures containing a filler substance for clarity modification:
Indications of clarity modification
Minor (or moderate, significant) amount of oil (or artificial resin etc.) in fissures at the time of testing.
Grandidierite, a magnesium aluminium borosilicate, is a very rare collector mineral which was first discovered in 1902 by Alfred Lacroix in southern Madagascar and named in honour of Alfred Grandidier (1836-1912), French explorer who studied extensively the natural history of Madagascar.

New Beaded Freshwater Cultured Pearls from China

“Mini Ming” Pearls
**Surprise Surprise....**

Hollow natural pearl with numerous metallic beads inside.

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Beadless freshwater cultured pearls mixed in a necklace of saltwater natural pearls.
The Art of Forgeries

“Aged” Cultured Pearls

To better hide the FWCPs, they were “aged” by a processing.

Dodo’s Egg ??
To better hide the FWCPs, they were “aged” by a processing.

The Art of Forgeries

Fake Pearl cut from a Shell
Tridacna
Natural Blister Concretion
We assume that it was a distal member of the caudal vertebrae of a large dinosaur, such as the theropods, a saurischian suborder, which comprises the largest land-living carnivores such as the *Tyrannosaurus rex* (see also Warren 1999).
Thank you for your attention