

NEWSLETTER No. 5, December 2006



Hello dear fellow SSEF ALUMNI members and friends,

As we are now coming to the closing of the year and to the birth of a new one, I hope that this year has been kind to you, and I can only wish for an even better 2007 and that it may shed a new ray of light of peace on this beautiful planet of ours. I wish it for all that the New Year will bring us good health, happiness, prosperity and a whole lot of intuition.

Allow me to reflect briefly into the past 2005/06. We have had some very interesting events, obviously, some attracted more participants than others, not because they were less interesting but maybe time is a little short for some after a long day's work.

The first excursion was a trip to the Grimsel Power Plant by a small group of SSEF Alumni members, where we also visited the attractive mineral museum and the breath taking Aare Gorge.

We travelled down the very colourful "Jade" road through Myanmar (Burma) and came in contact with some rare and beautiful jade pieces presented by Mr. George Bosshart together with his lovely wife who were ever so kind to share some of their unique experiences with us.

Together with Mr. Alexander Leuenberger we ventured through the rough mining fields of Madagascar with its rugged landscape, and had the opportunity to look at some magnificent sapphires and other minerals that he kindly brought along.

We witnessed the mystical world of the Parisian born Jean-Baptiste Tavernier (1605-1689) and of the history of the famous "Blue Hope Diamond" which has intrigued a multitude of people over generations. We are grateful to Mr. Michael Hügi for an evening full of fascinating information and knowledge. (No Hope Diamond at hand, maybe next time?)

We also travelled to colourful Bali, Indonesia, and visited some remote pearl farms. Throughout the evening we were all captivated by the fascinating lecture of Prof. Henry A. Hänni and impressed by the immense amount of invaluable information that he was willing to pass on.

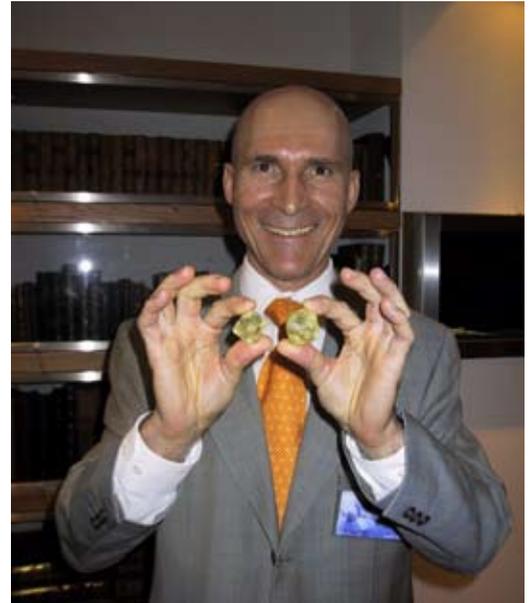
And then came our "Oldies Night" (no, not just for oldies) on an excursion boat on the lake of Zurich. We were entertained by a local radio disc jockey, had some good food, danced and generally had lots of fun. (We would love to see you on board next time!)

SSEF Alumni Trip to London

Our latest excursion was a visit to London on the last weekend of October. Upon arrival on Friday afternoon, we visited DTC (De Beers) and without the help of the lovely Doris Gerber of EDIGEM we might be still looking for DTC today (due to a small misunderstanding).

Mr. David Johnson and Ms. Samantha Quinn gave us a warm welcome and introduced us to the function that De Beers has in today's diamond world and gave us a glimpse of what lies in the future of the diamond industry. There was also a display of the latest scientific instruments used today.

We were also, to our total amazement, allowed to handle some of those rare yellow octahedral diamonds, one of them weighing over 360cts and another "only" approx. 150cts. (No there were no give-aways, pity!!!)



Daniel Boucard playing with "small" diamond crystals during our visit at DTC
© L. Ascot

Later our good friend and member, Mr. Edward Johnson, President of GIA Great Britain, greeted us with open arms at the GIA London. He and his wonderful team of gemmologists had arranged a cocktail reception which gave us the opportunity to loosen up and relax. Later in the evening, we were given a tour of the premises and an insight into how they conduct their institute and the various classes that they have on offer, ranging from basic gemmology to jewellery design. Additionally, we were also informed about the many other services which are provided – altogether very interesting and informative.



Edward Johnson (GIA London) together with Eric Emms Anchor-Cert Gemmological Office) together with the SSEF-Alumni Group at the GIA London reception.

© L. Ascot

The next day after a sound and peaceful sleep we all headed for the Crown Jewels at the Tower of London which needless to say were very impressive indeed.



Our next stop was a visit to the Gilbert Collection of Tiffany & Co. at Somerset House. On Edward's advice we decided to take a ferry boat down the Thames which also offered a sensational amount of English humour by one of the ship's crew members, this was a true laugh! Upon arrival at Somerset House we met up with Michael who had been lecturing not too far from London. We had a guided tour by a gentleman who was very professional and knowledgeable on this very extensive collection of jewels and art work.

Later that evening whilst looking around for a place to dine, Michael noticed a familiar face in a particular restaurant. It turned out to be Ian Mercer of Gem-A, Director of Education, who was dining out with his wife. Now, I must point out that London is not exactly a village and to run into someone you know in the heart of London, sitting in a restaurant by the window, is not a common happening! Maybe London is a big village after all?!

The next day, Sunday, we took a short walk from our very centrally located hotel to the Natural History Museum where we visited not only their very extensive collection of minerals but also the famous AURORA Diamond Collection, a unique arrangement of naturally coloured diamonds.

The three days spent together with SSEF ALUMNI members were truly an honour on my part. I wouldn't miss it for the world, Thank you.

As a final word I would like to thank you all , also on behalf of the SSEF ALUMNI team, for participating and for your very welcome support. We wish you all the very best for the coming year and may sun shine upon you all.

Leon Ascot



The SSEF Alumni Group enjoying spicy Tandoori Chicken and other delicious Indian food during the London trip.



A Worked Shell Bead as an Imitation of a Melo Pearl

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Fig. 1: The investigated specimen shows an orange colour similar to that of a melo pearl. A colourless transparent patch such as that seen on the top of the bead has never been reported on a melo pearl. The diameter of the bead is 23 mm.
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Fig. 2: Melo pearl showing spotty surface structure in combination with flame-structure.
© H.A. Hänni, SSEF 2006

Recently the Swiss Gemmological Institute SSEF received a specimen for testing, which visually resembled a melo pearl but which, in the end, proved to be an imitation made from the shell of a marine snail.

Melo pearls are non-nacreous calcareous concretions, which are produced by a marine snail (melo melo) commonly found in Southern Asia (Vietnam, Thailand, Myanmar). Melo pearls are usually orange to yellowish brown and are characterised by a so-called flame structure, similar to that of conch pearls and tridacna (giant clam) pearls. Due to their rarity and exquisite beauty, melo pearls are very expensive gems, which are highly sought after by collectors. For interested readers, we recommend the book "The pearl and the dragon" (ed: D.J. Content, 1999) which gives a detailed historical and gemmological description of an outstanding collection of 23 melo pearls.

The sample we investigated is button-shaped and undrilled. It measures about 23 mm in diameter and 16 mm in height and weighs 63.25 ct. Its specific gravity, determined with a hydrostatic balance, is 2.82, similar to the SG of non-nacreous pearls such as the melo, conch and tridacna.

The specimen is mostly orange with some linear colour concentrations. It also shows a colourless transparent patch (see Fig. 1), not so far described as having been observed on melo pearls. While a distinct flame structure is present, there is no spotty structure, as often seen on melo pearls (see Fig. 2).

Under the microscope, the intense orange colour concentrations along cracks and „flames“ closely resemble features familiar from dyed material (see Fig. 3). When excited by a long wave ultraviolet lamp, the orange part showed an orange red, swirly fluorescence. In contrast to this, untreated melo pearls normally show rather a yellow dotted LWUV fluorescence reaction. Based on these observations, it became obvious, that the sample had been artificially coloured using an orange dye. The colourless patch on the sample remained unaffected by the dyeing, as this part of the bead shows no pores in which the dye could enter. Apart from this detection of treatment, the microscope also revealed the true nature of the sample. A curved internal layering, cross-cutting the flame structure, is seen when the sample is illuminated by a fibre optic light (Fig. 3). Such layering has never been reported in a melo pearl. It is interpreted as the growth layering of the shell of a marine snail. In reflected light, the surface of the bead shows fine polish tracks running in all directions, indicating that the bead was polished into its present shape.



Fig 3: Orange colour concentrations along cracks and "flames" on the specimen indicate dyeing. Further, a slightly curved horizontal layering, cross cutting the generally vertical flame structure, becomes visible under strong fibre optic light. This layering is interpreted as growth markings of the shell from which the bead has been made.

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Based on these observations, our specimen was identified as a manufactured bead expressly designed to imitate a melo pearl similar to the specimens described recently by C.Y. Wentzell (2006). The conclusion was that the sample had been made from the shell of a marine snail and artificially coloured by an orange dye.



Fig. 4: The melo gastropod forms a rather thin shell. Manufacturing a bead from such a shell would be quite difficult.

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The shell of the melo melo is commonly very delicate and thin (Fig. 4). So the production of a bead of this size from a melo shell would be quite difficult, if not impossible. Most probably the bead was made from a marine snail such as the tridacna (giant clam) (Fig. 5), which has a shell thick enough to allow a bead of this size to be cut from it. Tridacna shells worked into round beads have also been used recently for coated pearl imitations (Hänni, 2004). It should be remembered that the tridacna is protected internationally under the CITES agreement.

Fig. 5: Shell of a Tridacna. © H.A. Hänni, SSEF 2006

The orange dye, which was used to imitate a melo pearl was analysed using a Renishaw Raman microprobe (using a 514 nm argon laser). Figure 6 presents the baseline corrected Raman spectra of the sample bead compared with the ones of red eosine dye (Bruker Inc.) and a melo pearl. Apart from the vibrational peaks due to aragonite, the sample bead shows no peaks at 1134 cm⁻¹ and 1527 cm⁻¹ characteristic of the natural colour pigment in melo pearls (and conch pearls). However, it reveals three broad peaks at 1363 cm⁻¹, 1499 cm⁻¹, 1519 cm⁻¹ which match quite closely with the broad Raman peaks of red eosine. This dye becomes orange when dissolved and it may have been this dye that was used for the artificial colouring of the bead.

An experienced gemmologist should be able to detect the true nature of such a manufactured and dyed bead easily, mainly based on careful microscopic observations. However, in the case of a manufactured “pearl” that has not been dyed, the identification may prove much more difficult (e.g. for “pearls” made from the conch shell). The main criterion for identification would then be the presence of layering as described above. No such feature has been reported in any natural non-nacreous pearl concretions to date.

References:

- Content D.J. (1999) *The Pearl and the Dragon*, with additional contributions by T. Moses, K. Scarratt, J. Traub, B. Zucker; Houlton, Maine USA, pp.107
- Hänni H.A. (2004) “Shell pearls” with Tridacna Clam Shell Beads, *Gems & Gemology*, vol. 40, No. 2, p.178
- Wentzell C.Y. (2006) Imitation Melo “Pearls”, *Gems & Gemology*, vol. 42, No. 2, p.166-167

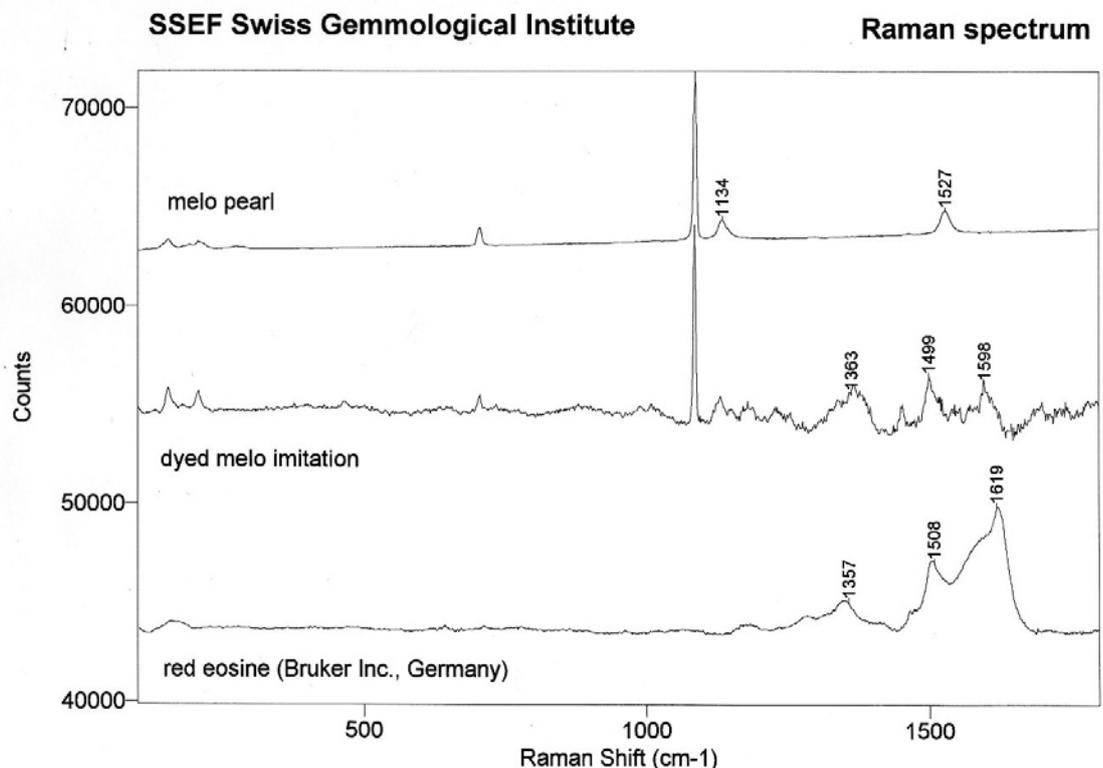


Fig 6: Baseline corrected Raman spectra of the investigated be dyed bead, red eosine dye and a melo pearl. Note the difference between the spectra of a melo pearl and the sample bead. © M.S. Krzemnicki

Trip to the Sapphire Mines of Pailin (Cambodia)

by Dr. Michael S. Krzemnicki, SSEF



After many years in the laboratory, finally december 2006 was the chance to get back into the field to visit mining sites, at least for a short three days trip to Cambodia. With Vincent Pardieu, director of AIGS Laboratory in Bangkok and well known gem-hunter in Asia as guide, a small group of Swiss residents including George Bosshart and Walter Balmer where meeting in Chantaburi in Thailand. The city of Chantaburi is one of the major market places for coloured gemstones, especially sapphires and rubies . Here rough stones are cut, heated, sold, and bought for the global market.

Shortly afterwards, we were on a small Toyota Pick-Up on our way to the Cambodian border. After a one hour ride, we arrived at the border, where we had to apply for a tourists Visa for the Kingdom of Cambodia (our passports are now covered with plenty of interesting stamps).



Pailin main street in the early morning. © M.S. Krzemnicki

Just after the border, Cambodia welcomed us with a mixture of rugged dust roads and some glittering Casino-complexes (Gambling is forbidden in Thailand !). After a rumbled half-an-hour by taxi, we arrived at our guesthouse in the centre of Pailin. Pailin is kind of an extensive village with small houses and huts along the dusty roads in the mids of a broad valley, surrounded by hills (old volcanos) and a mountain range. Pailin has been a source for basaltic sapphires for many years, especially in the early 19th century. The sapphires are especially well appreciated because of their somehow velvety blue colour quite similar to stones from Kashmir.



In Pailin © M.S. Krzemnicki



After a delicious Cambodia meal with a fine selection of old french red wines (one of the appreciated souvenirs from the French colonization) we returned to our sleeping rooms where a couple of cock-roaches were just enjoying their party...

*Local resident washing sapphires in Pailin.
© M.S. Krzemnicki*



Next morning we explored the aluvial and eluvial sapphire deposits around Pailin. As a reminder from the recent civil war in Cambodia, the whole area is plastered with mines and rockets, and every step has to be taken very carefully. This curse of anti-person mines is certainly a major reason for the apparent underdevelopment of the area. Only by international support (USA and Cambodia demining project), the terrible past will hopefully be transformed into a prosperous future for the people living in Pailin.

Near Pailin © M.S. Krzemnicki



We first stopped at the riverside where a few people were sitting in the river and washing the gravel and sand for sapphires. At the moment of our visit, only very few and small sapphires were found by the local residents. Later we crossed a basalt flow where sapphires had been mined in the past and sporadically even nowadays during the raining season.

Back in the village of Pailin again. © M.S. Krzemnicki



In the afternoon we returned to Pailin village where we met a gemstone heater in action. Just as we arrived he opened for us two small crucibles with gemstones, which he had heated only very recently. One contained a number of orange sapphires, obviously diffusion treated with beryllium. He explained that he was reheated the stones, as to slightly shift the colour into a brighter orange. The second crucible revealed a small number of zircon crystals, which had been heated to change their colour from colourless to light blue. Such blue heat treated zircons from Cambodia are well appreciated in the trade and sometimes sold as "starlite" (fancy name). It was very interesting to actually see how gemstones may be treated with a very low-tech approach.



Afterwards, we visited some small stone cutting workshops and a number of local gemstone dealers. After a good deal of discussions about the price, a number of beautiful rough and cut stones finally changed into our pockets...

With a short visit at a temple, we finished our round trip in Pailin. The next morning we left Pailin quite early and two hours later, we were back in the busy gemstone centre Chantaburi in Thailand. And only 24 hours later, I was again on my way to Switzerland...



PS: I would like to thank Vincent Pardieu (AIGS Bangkok) for the excellent organisation and guiding during our trip to Cambodia.

News from the library:

Search the Web....

Some useful websites just found on internet:

<http://www.fieldgemology.com/>

Website by Vincent Pardieu (AIGS Bangkok) with a lot of information about his extensive gem-hunting around the globe

<http://famousdiamonds.tripod.com/>

A site dedicated to famous diamonds and other famous gemstones.

<http://www.gemmes-inclusions.com>

A very nice site with pictures of inclusions (in english or french)

<http://www.opal.asn.au/information.htm>

This is for our opal friends

<http://mars.jpl.nasa.gov/odyssey/gallery/video/movies/ThemisFlybyMusic.mpg>

...or what about a space shuttle ride into the great rift structure on Mars

How to become a Member of SSEF Alumni ?

The SSEF Alumni Organisation is open for former participants of courses at SSEF Swiss Gemmological Institute, FGA students, and further interested persons in the gemmological community.

The SSEF Alumni is intended as a platform for the exchange of information and for continuous gemmological formation. Membership fee is 50 Swiss Francs per year. Please see our website for more information (www.ssef-alumni.org) or contact our President, Leon Ascot at info@ssef-alumni.org, when you would like to participate at exclusive SSEF Alumni events and to receive the highly informative electronic newsletter four times a year.

Impressum:

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You are invited to contribute to the newsletter with short articles of interest for other SSEF Alumni members. All contributions should be sent to Dr. Michael S. Krzemnicki gemlab@ssef.ch and will be published after editing if appropriate for this newsletter.