

SSEF FACETTE No. 15

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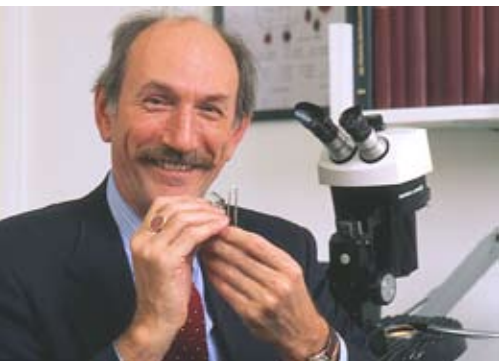
International Issue No.15, January 2008

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Dear Reader

During the year we received positive signals from the gemstone and jewellery business, and the demand for SSEF test reports was very satisfactory. A general good turnover all over the year enabled an excellent balance at the end of the year. In all of our working sectors SSEF could expand its services. The mean carat weight of SSEF diamond grading reports is slightly over 2.5 ct. Coloured stones and pearl analysis require specialisation to a high degree since this matter is more complex



than just diamond grading. It is not only a matter of equipment and sophisticated instrumentation, rather more a matter of skilled staff, academic access and long experience.

A representative reference collection and library, ongoing research activities, and a network with specialists

all over the world are characteristic for the small laboratories like SSEF, AGTA, and Gübelin. And of course, only an attitude to stay in one laboratory, to learn the job thoroughly, and to consolidate the knowledge, will strengthen the team and push the company forward.

Issuing gemstone reports in a globalised world means offering the identification service to clients who may have their business activities far away from Switzerland. SSEF has been delivering many reports to Geneva, which is an important window to the world. Our clients in Geneva have relations to Paris, London, New York, Hong Kong and more. Since about 14 years, SSEF is present each September at the Jewellery and Watch Fair in Hong Kong, testing stones at the spot. Asian clients require a stronger presence than once a year. As a consequence SSEF launched in 2007 its on-site services in Bangkok, a major gemstone trading place. SSEF specialists are now offering the highly professional gem testing service a few times a year Bangkok. In January 2008, we will expand our activities and work in Macau, Bangkok and Taipei with our mobile equipment.

Local offices and laboratory structures allow a safe working by offering space, security and infrastructure. Detection of treatments and determination of origin are the main requests that our clients will have. For these purposes "SEEF Flying Gemmologists" are perfectly prepared, ready to deliver Swiss quality in the East already at the beginning of the New Year.

Expanding services is frequently related with increasing staff. Indeed we are about to train two

new secretaries and a gemmologist to strengthen the capacity of the laboratory and to meet the challenges of the future.

I would like to take this opportunity to extend to you all my best wishes for your personal happiness, health and success in 2008.

Sincerely,

Prof. Dr. H.A. Hänni
Director of the SSEF Swiss Gemmological Institute

Good news for our customers abroad: no VAT on our services

Due to a changed interpretation of the existing tax regulations by the Swiss tax authorities, our **non-Swiss** customers will no longer be invoiced the VAT of 7.6 % on services at SSEF. This means, you will not have to apply for the refund of VAT anymore in future.

SSEF membership fee:

Dear SSEF Client

Did you already know that the SSEF Membership fee is due on February 28, and a reduction of approx. 25% on the normal tariff list is granted to registered members only ?

Impressum:

Annual SSEF publication by:
SEEF Swiss Gemmological Institute
Falknerstrasse 9
CH-4051 Basel
Switzerland

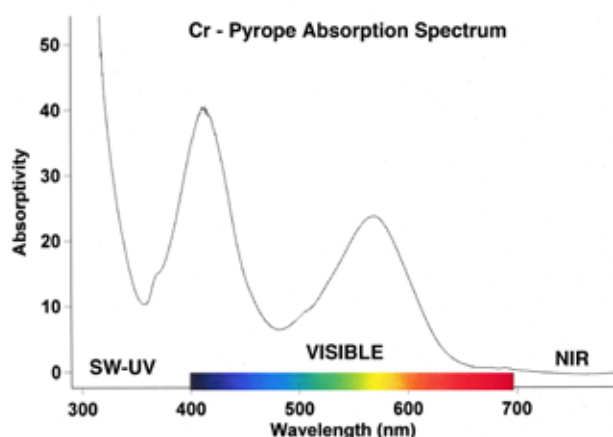
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SSEF develops a Mobile UV-Vis Spectrometer

Analyse gemstones at high resolution but low costs...

The very first analytical instrument in the early days of the SSEF laboratory was a Pye-Unicam spectrophotometer that was needed to identify treated coloured diamonds. In the meantime we have used three more photometers (Hitachi, Uvikon and Varian), all of them expensive and heavy laboratory instruments.

In the gemmological laboratory a spectrophotometer records the amount of light absorption of a gemstone in respect of the wavelength. As an example see the absorption spectrum of a chrome-pyrope: red light (650 - 700 nm) is barely absorbed and defines the red colour of the stone.

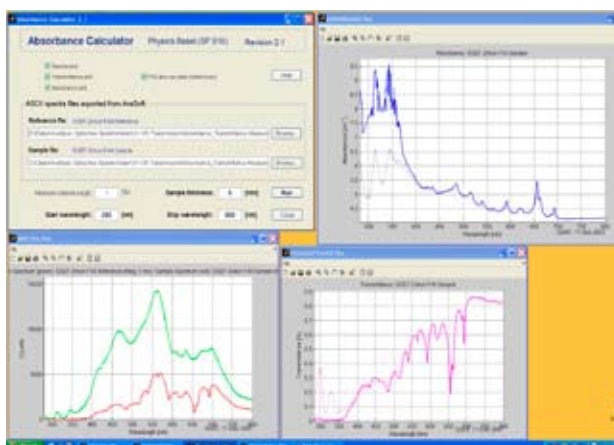


In this example the analysed spectral section extends from 290 to 800 nm. That means the spectral analysis covers the range from long wave ultraviolet (UV) over the visible (Vis) to the near infrared (NIR). For gemmological applications in this section information about cause of colour, colour authenticity and origin can be gained. Especially in the field of origin determination of blue sapphire, the availability of spectrometric data is important (Bosshart, 1981; Hänni, 1990). Our current lab instrument, the Varian Cary 500 is our most performing UV-Vis-NIR spectrometer used in pearl colour authenticity testing, sapphire origin analysis and especially in cryo-spectroscopy for diamonds.

Since SSEF has been offering off-premise gemstone testing in Bangkok and Hong Kong, the availability of spectroscopic data has often been difficult. Instead of finding one of these bulky spectrometers for our use in our Asian destinations, we have decided to develop a portable instrument that satisfies our needs. The collaboration with M. Steinacher from the Physics Department at the Basel University has led to success. The new mobile UV-Vis spectrophotometer is a small and versatile instru-



ment, which actually fits into a small “shoe box”. Not only it is possible to take easily absorption spectra from UV up to near infrared, this high-resolution spectrophotometer enables us also to register photoluminescence spectra using a 405 nm LED light source. The new instrument is a major step towards a mobile lab due to its small dimensions, low weight, and easy operation. Interested clients may visit us during our on-site services around the world to see the instrument in operation. SSEF plans to sell a small series of this instrument to interested clients and labs at a very competitive price. Contact SSEF for more details (gemlab@ssef.ch)



Jadeite Jade as seen by a European gemmologist

From the mineral to the rock

Most gemstones are transparent monocrystals. In contrast, jadeite $\text{NaAlSi}_2\text{O}_6$ commonly appears as a polycrystalline material. The mono-mineral aggregate can also bear foreign minerals, and the way down to a rock i.e. an association of different minerals is open. Sometimes black grains of presumably chromite are encountered in green jadeite. We can see them as relics from the chromium source that supplied the chromophore elements. When the presence of foreign minerals becomes substantial, we are facing a rock. A related gemstone is Maw Sit Sit, the material that is closely related to jadeite. It occurs in the classical jadeite area in Burma (Namshawa, 10 km north of Lonkin) and comprises a number of other minerals, such as chromite, kosmochlore, jadeite, Cr-jadeite, Cr-eckermanite, symplectite, zeolithes, albite and serpentine. The densities vary between 2.5 and 3.2 g/cm³, according to the variable mixture of minerals (Hänni & Meyer, 1990).

Coloration by chromium admixture

While ideal minerals possess a simple chemical formula to express their composition e.g. jadeite $\text{NaAlSi}_2\text{O}_6$, real gemstones usually contain admixtures that can go to considerable scales. Generally, small amounts of foreign elements, which often are responsible for coloration are covered by the term "trace element". A trace element is thus not a specific element, but any element at a certain low level below about 0.5 weight percent (wt%). When the concentration is higher we use the term "minor element" that goes up to a level of 5 wt%. Major constituents of a chemical formula are "main elements". Interesting is to see the role of chromium

in jadeite, depending on the amount: it may be a trace- a minor element or a main constituent. Let me explain this in more detail. We are used to say that a nicely green jadeite owes its green to trace of chromium, characteristically around 0.5 wt% Cr_2O_3 . When higher amounts of Cr are present, the colour goes to dark green or becomes even black. Together with this increase of Cr, certain "constants" such as RI and SG increase in value. And the question may arise: how much Cr can a jadeite digest?



Fig. 1
Green Jadeite Jade carving of high quality. This untreated jadeite is classified as A-Jade in the Asian trade. The green colour is due to traces of chromium in the jadeite crystal structure.

A mixed crystal series situation

Here we must discuss a concept that is helpful in the science of mineralogy. The concept of a so-called "solid solution" between two well-defined end members is used in mineralogy to describe mixtures between so called end members. These admixtures refer to ions in the crystal lattice, rather than to mineral grains. The crystal lattice is a geometrically defined pattern for constituents of the mineral composition. Certain identical positions in the lattice may be occupied by differing ions of similar size (isomorphous replacement).

Since aluminium Al and chromium Cr have a similar



Fig. 2
Maw sit sit rock and cut slabs from Myanmar (Burma).

ionic size and same 3+ charge they are easily exchangeable in the crystal lattice. And because a mineral grain is composed of million times the mineral formula, there is a frequent possibility to occupy the 3+ lattice site with Cr instead of Al. It is just the availability of Cr during crystallisation that governs the extent of replacement. And this situation exactly depicts the solid solution scenario between the end-members jadeite $\text{NaAlSi}_3\text{O}_6$ and kosmochlore $\text{NaCrSi}_3\text{O}_6$. The middle point of this series is represented with the formula $\text{Na}(\text{Al}_{0.5}\text{Cr}_{0.5})\text{Si}_2\text{O}_6$. This two component mixed crystal situation is also applicable to the pyrope-almandine series of garnet, where the well-known rhodolites are represented with a pyrope85/almandine15 ratio.

With green jadeite we face two main compositions that form chemical admixtures: kosmochlore and omphacite, related minerals that go into solid solution with jadeite (Fig. 3). While kosmochlore covers the Cr admixture in real jadeite, omphacite covers the Ca, Mg and Fe encountered in jadeite. We can now discuss how much of a foreign component of either kosmochlore or omphacite is allowed in a jadeite so that it is still regarded as jade. A solution is proposed by the new Hong Kong standard of Fei Cui Jade that gives upper limit values for RI as 1.688 and SG as 3.40. The discussion here is still related to a monomineralic and polycrystalline mixture of members of the Jadeite-Kosmochlore series. The natural Fei Cui jade may, of course, also contain foreign mineral grains such as chromite that move the SG

to higher values.

Conclusions

Jadeite Jade is a usually monomineralic rock or a polycrystalline mineral. It can, however, change its well known status either by mixing in a solid solution to kosmochlore and omphacite, or by blending with other minerals where it may find itself even as a minor component, as in maw-sit-sit. By these behaviours jadeite and its related materials are greatly educating gemmologists, broadening up our views. In Hong Kong, the gemmological association has treated the problem in order to give guidelines for the jade trade with regards of terminology and testing standards. The result is a publication worth to have in your bookshelf: Standard Methods for Testing Fei Cui (Jadeite Jade) for Hong Kong. Please contact the Gemmological Association of Hong Kong to order the Fei-Cui Jade publication at gahkltid@gmail.com

This subject is treated in an article appearing in the Journal of the Gemmological Association of Hong Kong in English, and in the journal Gemmologie (Z.Dt.Gemmol.Ges.) in a German version. e-mail address of the author: gemlab@ssef.ch

Jadeite - Kosmochlore Solid Solution

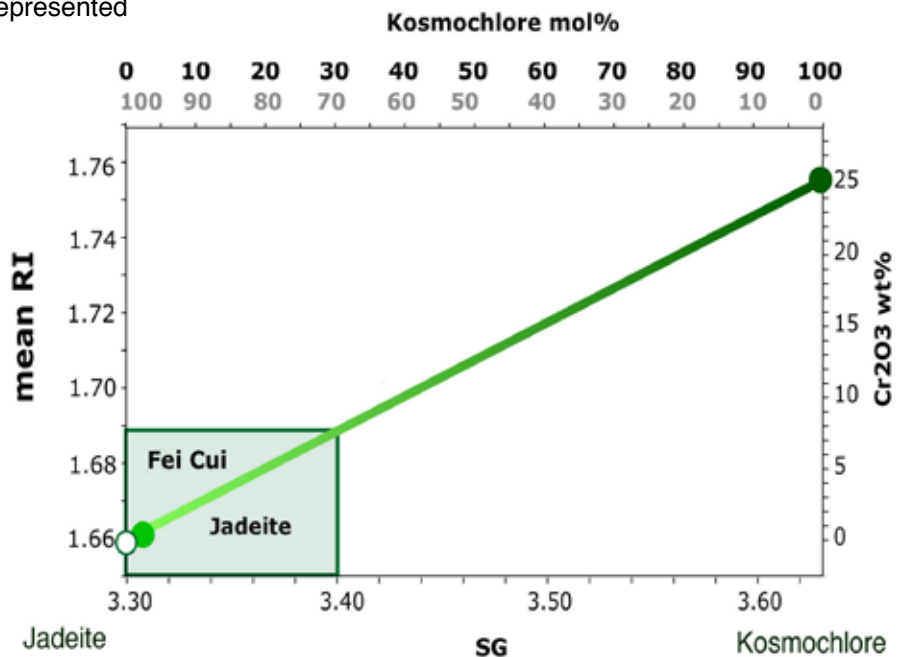


Fig. 3: Simplified graph showing the relationship of density and mean refractive index in the two-component system of jadeite and kosmochlore. The curve shows a linear relationship with the degree of substitution. A solid solution of jadeite with omphacite would have a similar increasing effect as that of the kosmochlore admixture. The green field shows the data that include the Fei Cui jade as proposed by Hong Kong. © H.A.Hänni

SSEF research using Laser Ablation Inductively Coupled

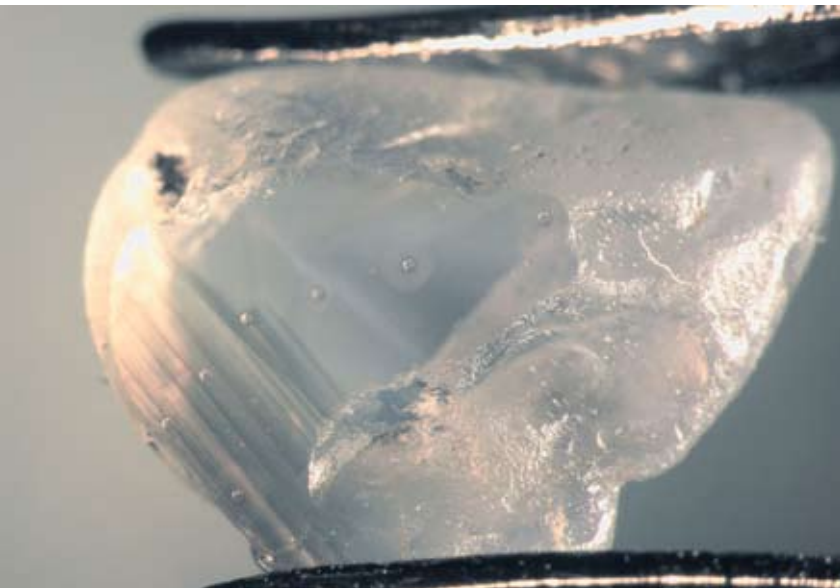


Fig. 1: LA-ICP-MS drill holes on an untreated sapphire with milky zones, showing trace amounts of beryllium (up to 3.2 ppm). © M.S. Krzemnicki, SSEF

International gemmological laboratories such as the SSEF Swiss Gemmological Institute not only test gemstones in large quantities, much more importantly, they are the driving force behind any research on gemstones for the benefit of the trade (SEF was the first lab to offer the identification of HPHT treated diamonds and beryllium diffusion treated sapphires as a routine service to our clients). To meet the demand of the trade and consumers to be able to detect any new developments (e.g. new treatments) in gemmology, the SSEF is constantly evaluating new analytical tools for gemstone analysis. Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS) is one of these new fancy tools, which have a great potential for chemical analysis of gemstones. But it is not only the name of this instrument that sounds sophisticated, the method itself is too.

The working principle of LA-ICP-MS

A pulsed ultraviolet laser beam drills a tiny ablation pit onto the surface of the sample. Generally, the size of the ablation pit (60-100 μm or 0.06 – 0.1 mm) is less than the diameter of a hair and thus nearly invisible to the naked eye. The ablated material is then transported into an inductively coupled torch, where it forms a ionic plasma. The ions are then injected into a mass spectrometer, where they

are separated according to their mass and charge. With LA-ICP-MS, it is possible to determine the chemical composition (and isotopes) of any solid by measuring simultaneously major element concentrations (up to 100 wt %) and ultra trace element concentrations (ppb, parts per billion). LA-ICP-MS is a slightly destructive method compared to other techniques commonly used for gemstone testing (e.g. XRF). However, by positioning the ablation pit on the girdle of a gemstone and given its very small dimensions, the “damage” to the stone can be minimised and the beauty of the stone remains intact.

The SSEF Swiss Gemmological Institute started its first LA-ICP-MS analyses on gemstones in 1999 with a series of corundum samples. Since then, we have analysed a large range of gemstones including untreated and treated sapphire and ruby, chrysoberyl, beryl, pezzottaite, tourmaline (Paraiba), musgravite, taaffeite, and pearls.

Currently, the SSEF Swiss Gemmological Institute is cooperating closely with Prof. Thomas Pettke from the Geochemical Laboratory of the University of Berne for LA-ICP-MS analyses, using a setup optimized for analyses of mineral samples. The system operates with a specially designed short wave ultraviolet laser, thus resulting in a very effective ablation. The instrument is equipped with a Perkin-Elmer mass spectrometer. Our operation parameters, which have been chosen carefully for consistent data acquisition, follow the procedures described by Longerich et al. (1996). Each LA-ICP-MS analysis actually takes place over a certain period of time during which the laser drills minimally into the sample (about 60 seconds per analysis). The registered raw data is subsequently processed at SSEF to gain quantitative chemical data. Considerable time and experience is required for this processing in order that all possible information may be gained from the LA-ICP-MS and misinterpretation of the results be avoided. It is obvious from this description of the process, that this highly sensitive technique requires scientifically trained staff both for operation of the instrument and data processing.

Possibilities and limitations of LA-ICP-MS

With LA-ICP-MS, chemical analysis of gemstones is taken to a new level. The possibility of analysing

Plasma Mass Spectrometry (LA-ICP-MS)

up to 40 elements simultaneously (using our setup) and over several orders of magnitudes (from main elements to ultra trace elements) is one of the main advantages of this method. Furthermore, it is possible to analyse most chemical elements down to very low concentrations; even such light elements as beryllium, lithium and boron. As the laser drill pits are very small, it is even possible to gain information about the chemical zoning of a gemstone. However, LA-ICP-MS does have some drawbacks. First of all, some clients may not find even the tiniest laser drilling pit on their sample acceptable (e.g. if it is a historical piece), so LA-ICP-MS cannot be used on their stone. Also, due to the limited size of the sample chamber, it is generally impossible to analyse any mounted stone using LA-ICP-MS. There are also quite a lot of analytical factors, which have to be controlled meticulously to avoid lower resolutions, interference by recombined molecules and contamination effects. Each LA-ICP-MS analysis produces a large quantity of raw data, which has to be processed adequately to gain quantitative chemical analyses of a gemstone. The LA-ICP-MS is also quite an expensive instrument (minimum about US\$ 300'000) with high operation and maintenance costs. It requires scientifically trained and specialised staff for its operation.

Conclusion and Outlook

LA-ICP-MS will become an important technique in

the field of gemmology because of its sensitivity and versatility for trace element analysis in gemstones. The SSEF Swiss Gemmological Institute regularly analyses gemstones with LA-ICP-MS. Currently, this is mostly for research purposes and only rarely as a lab service for a client's stone.

It has to be stressed, that chemical data of a gemstone is in many cases not sufficient to provide a full assessment of a stone. The LA-ICP-MS is not a black box in which you simply place your stone and after a short period of analysis get a full identification and breakdown of what it is you own. Some gemstone dealers use the term LA-ICP-MS as a synonym for accuracy and as a solution for all problems in gemstone testing, ignoring the fact that the detection of heat treatment in a corundum is still readily done by using a microscope. The authors also consider that an origin determination of a gemstone relying only on chemical data is not feasible in most cases. Gemstone analyses in the future will rely on a logical combination of techniques, which include the correct interpretation of microscopic features with trace element analysis (e.g. by LA-ICP-MS) and spectroscopic (absorption and luminescence) data.

This text is a short version of an article by Krzemnicki et al., which is in press in the Journal of the Gemmological Association of Hong Kong.

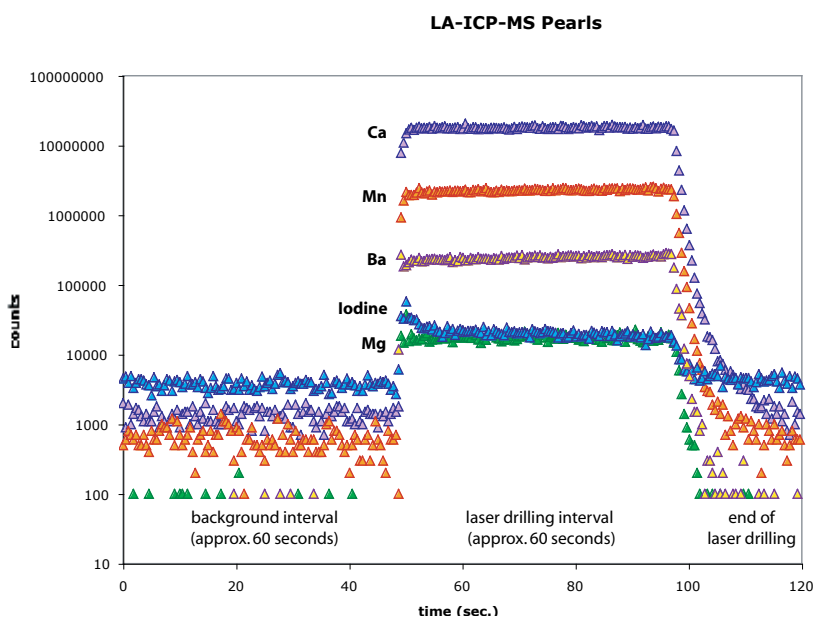
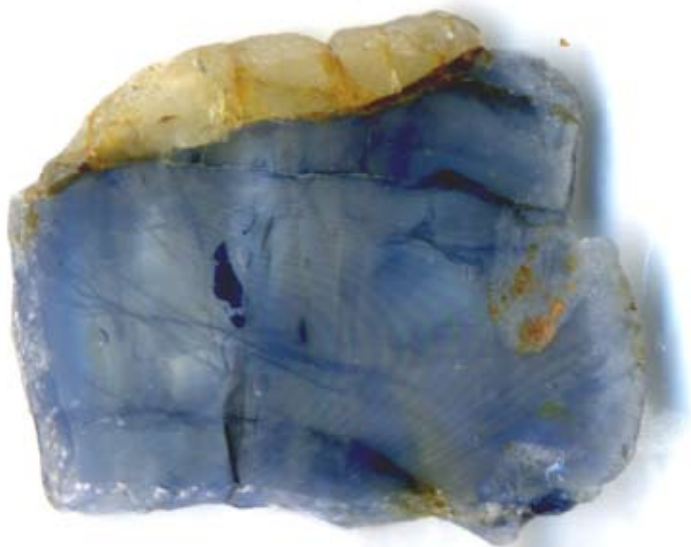


Fig. 2:
LA-ICP-MS analysis of a Chinese freshwater cultured pearl. The counts per laser drilling time (approx. 1 minute) for calcium, manganese, barium, iodine, and magnesium are shown. The plot represents one laser drilling on the pearl. Element concentrations values are calculated by integrating the signal over the drilling interval. © M.S. Krzemnicki, SSEF 2007

Beryllium in sapphire

Beryllium diffusion treated blue sapphires have been reported from the gem trade in the last few years. Although we do not see many of these stones in the SSEF lab, there are certainly large quantities of these stones in the market. Beryllium diffusion treated blue sapphires usually show characteristic inclusion features such as cloudy diffusion halos and circles around transformed crystal inclu-



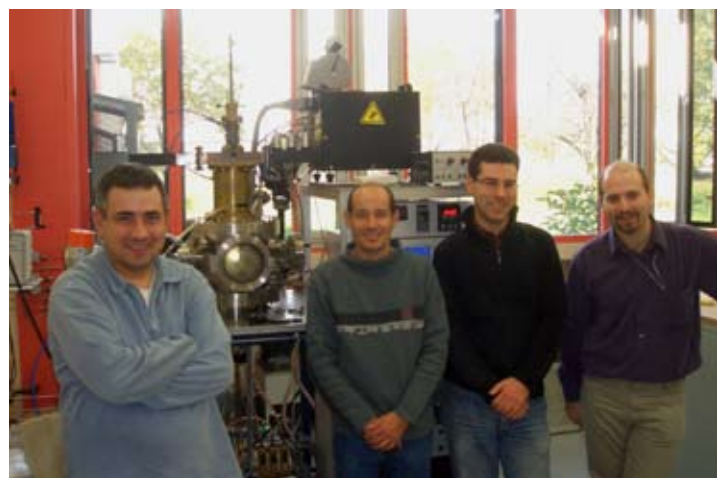
Intergrowth of sapphire with yellow chrysoberyl. LA-ICP-MS data shed new light on the concentration and distribution of beryllium in untreated sapphire. © H.A. Hänni, SSEF

sions such as zircon. The extent of these diffusion halos is an indication for the intense and prolonged heating which is applied on these stones. The detection of beryllium diffusion treated sapphires using our GemLIBS is a service, SSEF introduced successfully three years ago. Just recently, we have launched an additional service for the watch and jewellery industry for testing batches of small and calibrated sapphires and rubies. Please contact SSEF for more information gemlab@ssef.ch
In 2007, research in coloured stones concentrated on a very uncommon sapphire/chrysoberyl intergrowth (Figure 2) from a basaltic deposit in northern Madagascar. The sample is especially interesting as it confirms that low trace amounts of beryllium may also be found in natural untreated sapphires. The distinct correlation of beryllium with tantalum, niobium, thorium, and tin is most probably due to the presence of nano-inclusions in these sapphires. Our ongoing research is supported by other institutions such as the geochemical laboratories of the University of Berne (Prof. T. Pettke) and of the Swiss Federal Institute ETH (research group of Prof. C. Heinrich), and other labs such as the AIGS and the Gübelin Gemlab.

Synthetic CVD Diamonds: SSEF visits Research Lab

In October, P. Lefèvre and J-P. Chalain were visiting the Laboratoire d'Ingénierie des Matériaux et des Hautes Pressions (LIMHP). This laboratory belongs to the Centre National de Recherches Scientifiques (CNRS) and is located in the Campus of the University of Paris 13 in Villetaneuse, France. It is worldwide renown for its outstanding ability to precisely control the growth of Chemical Vapor Deposited (CVD) synthetic diamonds. The lab team is able to control the incorporation nitrogen in CVD synthetic diamonds at the precision of a few ppm's. We were especially impressed by their research on the growth rates related to different diamond crystal sectors.

Sharing information mutually between our SSEF laboratory and the LIMHP research team headed by Dr. Jocelyn Achard is crucial for updating our knowledge about CVD synthetic diamonds. Following this visit, some specimens were loaned to SSEF for investigation. The results of our gemological testing are currently discussed within the two teams. A short publication about a sample showing properties never described before in literature is in preparation.



At the LIMHP research laboratory. From left: François Silva, Jocelyn Achard, Pierre Barroy from LIMHP, and Pierre Lefèvre from SSEF. @ SSEF 2007

Study of a 296 ct rough diamond

For gemmologists, the study of a diamond of more than 100 ct is a rare occasion. When these exceptional nature's gifts are submitted to SSEF for scientific non-destructive investigations, most of these gemstones are cut and polished. In January 2007, SSEF had the pleasure to study a excep-

tional 296.59 ct (59.3 grams) rough diamond. The transparent and yellow stone measures 37.94 mm x 37.86 mm x 37.68 mm. It is a octahedron with rounded edges and slight surface etching features. Large trigons, sometimes overlapping each other, are visible on the octahedral faces. Numerous dissolution features are visible on each crystal edge. Some black to brownish grey inclusions are visible. With our Raman microprobe one of these inclusions was identified as graphite.



Under crossed polarized filters the diamond showed 3rd order interferences colours dispersed and localised around a few inclusions. Under long and short wave ultraviolet illumination (356 and 254 nm respectively), the crystal shows none and slight orange fluorescence, respectively; no phosphorescence is observed.

The infrared spectrum (FTIR) of the specimen shows that the diamond is a type IaAB diamond. A weak absorption at 3107 cm^{-1} reveals the presence of hydrogen.

The UV-Vis-NIR absorption spectrum recorded at room temperature confirms the FTIR conclusion and shows typical natural absorptions peaks (e.g. N3 at 415 nm, N2 at 478 nm). A non-ascribed absorption feature at 934 nm with a full-width half-maximum of 5 nm is also observed. It might be a typical absorption of type IaAB diamonds, clearly revealed here thanks to a large path beam (3 cm) due to the exceptional size of the crystal.

Acknowledgments: We would like to thank Mrs Marianne Buchs-Sägesser from Schmuck-Information Schweiz, Türler Uhren und Schmuck in Zurich, and the DTC (UK).

Fig 1: Rough diamond of 296 ct weight, showing black inclusions. © SSEF 2007

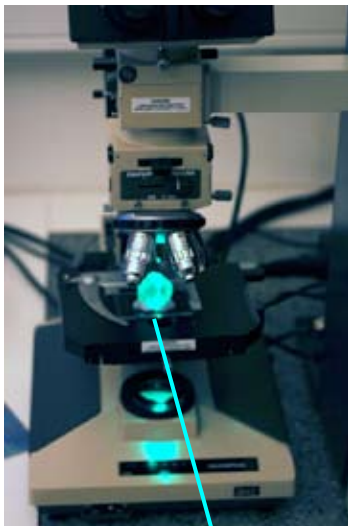
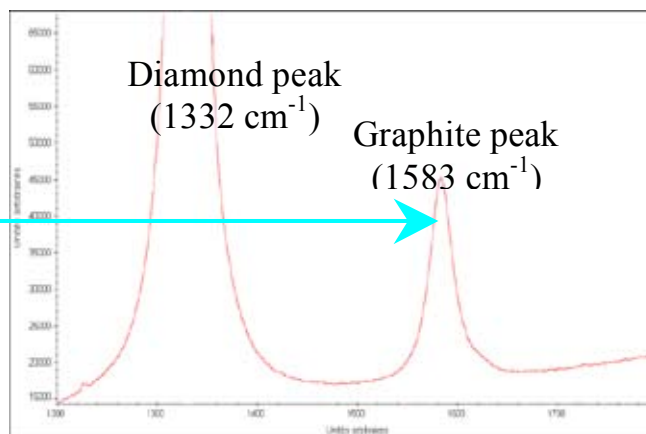


Fig. 2: The specimen under the Raman microprobe, illuminated by the 514 nm laser beam. © SSEF 2007

Fig. 3: Black graphite inclusion just below the diamond surface. © SSEF 2007

Fig. 4: Raman spectrum showing the graphite peak at 1583 cm^{-1} Raman shift. © SSEF 2007



SSEF Courses in 2008

As in the previous years, many students have participated in 2007 at one or several SSEF courses. The SSEF Swiss Gemmological Institute has formed, once again, gemmologists from all over the world at different levels with our basic, advanced and scientific courses.

In 2008, SSEF offers again plenty of possibilities to enhance your knowledge in gemmology. For students, who would like to earn a diploma in gemmology, we offer the SSEF Basic Training Course (23 June - 8 July 2008) or the SSEF Basic Diamond Course (1-5 September). The SSEF diploma is only issued after the student has successfully passed a theoretical and practical exam (see section „congratulations...“). Through further courses (SSEF Advanced Training), topics of the basic courses can be studied more in depth.

In 2008 we offer again so-called practical days, which will take place 7th January, 31st March, 9th June, 8th September and 3rd November. These days address to all interested people that want to freshen up their skills and practice under guidance with gemstones from our large collection. You may even bring your own gemstones.

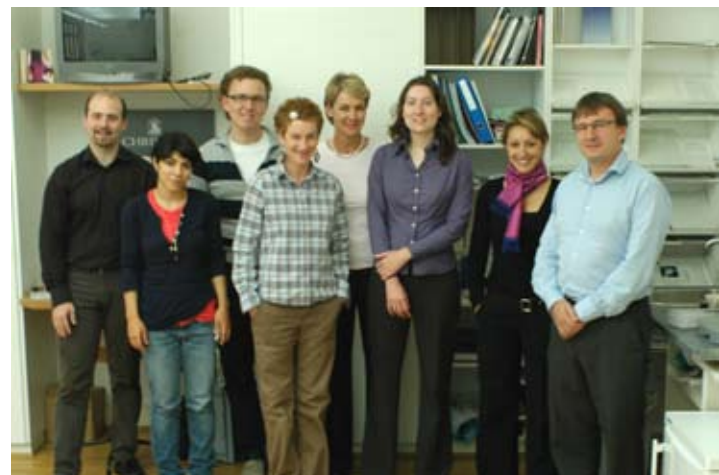
As for many years, SSEF is offering again its unique high-end Scientific Gemmology Course (28 January to 1 February and 11-15 August 2008) and Scientific Diamond Course (4 – 8 February and 20 - 24 October 2008), in which laboratory staff and well-educated gemmologists from all over the world are trained on the use of scientific methods for gemstone testing. Each of these courses takes one week. The participants (not more than 4) learn the application of spectrometry (FTIR, UV-Vis-NIR, Raman, EDXRF, LIBS) and methods such as SEM, X-ray luminescence, and X-ray radiography for gemstone identification.

For the complete course programme or more information please contact SSEF: admin@ssef.ch (tel. +41-(0)61 262 06 40) or see our website www.ssef.ch (download our course programme as a pdf file!).

SSEF Basic Diamond and Small Diamonds Courses

SSEF Basic and Small Diamond Courses
The SSEF is offering two different diamond courses for diamond quality grading. The Basic Diamond Course is addressing to everyone who wants to know more about diamonds and diamond grading. During this course, the participants learn how to grade the quality of a diamond step-by-step. Students who passed the final exam successfully

receive the SSEF Basic Diamond Certificate, recognized by the Swiss Gemmological Society (SGG). Diamonds may also be cut as very small stones with a weight equal or less than 1 point, mainly used in the watch industry. That's why the SSEF created few years ago the SSEF small diamond course. This is an advanced course in which participants will learn the procedures and methods to perform themselves a quality control of such small diamonds. These courses are aimed at people working in the jewellery and watch industry. Previous experience is welcome but not a requirement. For the training of a larger number of staff members, we are pleased to offer SSEF Company Courses, which may be especially designed after your requirements. Please contact SSEF for any question concerning such a Company Course (admin@ssef.ch, or tel. +41 61 262 06 40).



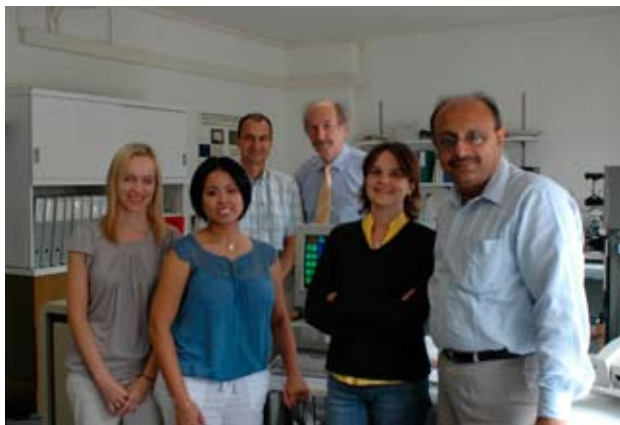
The participants at the Basic Training Course R. Gyr, S. Ganguin, P. Schaefer, H. Villiger, C. Fazio, S. Forcart, together with Pierre Lefèvre (on the left) and Dr Michael S. Krzemnicki (at right) © SSEF 2006

Scientific Diamond Course

In October 2007, the SSEF hold it's Scientific Diamond Course (SDC). The participants, Flavio Butini, José Luis Guiu and Melissa A. Santelices received the SSEF Scientific Diamond Certificate. This one-week course is a completion in scientific gemmology and brings the participants to the forefront of synthetic diamond detection and treatment identification. Up-to-date analytical equipment is demonstrated and the participants exercise the various techniques themselves. In 2008, the SSEF offers two possibilities to participate at the SSEF Scientific Diamond Course, first from 4 – 8 February and second from 20 - 24 October. The provided methods include infrared spectroscopy (FTIR), absorption spectroscopy in visible and ultraviolet (UV-Vis) at low temperature (-120°C), and photoluminescence spectroscopy (PL) at low temperature. Participants will experience themselves the methods, and the

course notes contain numerous spectra. They also contain two valuable tables, which summarise the „Defect induced vibrational bands“ and the „Optical bands“ found in diamonds. A list of reference books is also given.

For further information contact SSEF: admin@ssef.ch (tel. +41-(0)61 262 06 40) or see our website www.ssef.ch where you can download the detailed course programme.



Laura Surawy, Melissa A. Santelices (Tiffany's), Chiara Parenzan, and Satisk Kumar G. Shah, together with Prof. Henry A. Hänni, and Jean-Pierre Chalain in the background. © SSEF 2006

Scientific Gemmology

The SSEF Scientific Gemmological Courses given in January and in August were a great success with nine participants. The participants, José Luis Guiu, Carolina Guiu-Saez, Sabine Häberli, Stéphane Jacquat, Chiara Parenzan, Dr. Keiko Ryu, Melissa A. Santelices, Satisk Kumar G. Shah and Laura Surawi received their certificate after an interesting week guided by our qualified SSEF staff.

In September 2007, Dr. Michael S. Krzemnicki was invited for a one-week special course in Bahrain held for the staff of the gemmological laboratory of the Directorate of Precious Metals and Gemstones. This course was a follow up to our Scientific Gemmology course. It was specially designed to supply a hands-on training on the Raman-, FTIR-, and UV-Vis-NIR spectrometers installed recently in their laboratory. Subsequently, one of their staff members, Mr. Osama Salman Taqi, has visited the SSEF laboratory in Switzerland for an intense three-days training on UV-Vis-NIR spectroscopy in November 2007.

As it is already a tradition, we offer the one-week Scientific Gemmological course in 2008 again two times (28 January to 1 February and 11-15 August 2008).

During this course, the participants are learning techniques and applications of instruments like X-ray fluorescence spectrometry, UV-Visible-NIR

spectroscopy, LIBS (Laser Induced Plasma Spectroscopy), Raman and FTIR spectrometry, as performed at the SSEF Swiss Gemmological Institute. For this highly specialised course, a scientific background or some experience in gem-testing is requested. For information and application contact us by phone (+41 (0)61 262 06 40) or email (admin@ssef.ch).

Congratulations...

SSEF Swiss Gemmological Institute wants to express its congratulations to the following persons for receiving:

SSEF Basic Gemmologist Certificate:

With distinction

- Ramineh Gyr, Baar
- Ruby Rudin, Stäfa
- Arvind Jagtap, Binningen

and the following successful participants:

- Claudia Fazio, Basel
- Sophie Forcart, Geneva
- Sandro Ganguin, Riazzino
- Valérie Geoffray, Le Locle
- Pauline Schaefer, Geneva
- Karima Sundrani, Baar
- Nancy Staehelin, Riehen

Advanced Gemmologist Certificate:

Course on treatment and origin of coloured stones

- Erez Bezalel, Antwerp, Belgium
- Uta Freifrau von Dalwigk-Machatus, Germany
- Carole Gordon, Gemm. Ass. of Great Britain
- Francesco Tamburi, Rome, Italy

SSEF Special Course UV-VIS-NIR:

- Osama Salma Taqi, Metalgem, Bahrain

SSEF Scientific Diamond Course

- Flavio Butini, Rome, Italy
- José Luis Guiu, Les Borges Blanques, Spain
- Melissa A. Santelices, Tiffany&Co, NJ, USA

SSEF Scientific Gemmological Course

- José Luis Guiu, Les Borges Blanques, Spain
- Carolina Guiu-Saez, Les Borges Blanques, Spain
- Sabine Häberli, Basel
- Stéphane Jacquat, Geneva
- Chiara Parenzan, Bergamo, Italy
- Dr. Keiko Ryu, Hamamatsu – City, Japan
- Melissa A. Santelices, Tiffany&Co, NJ, USA
- Satisk Kumar G. Shah, Hyderabad, India
- Laura Surawi, London, England

We wish all successful participants a bright gemmological future!

SSEF expands to Asia

In 2007, the SSEF Swiss Gemmological Institute has made a major step to expand its activities in Southeast- and East Asia. After more than ten years, in which the SSEF has been present at the September Show in Hong Kong offering on-site certification, we decided to strengthen our ties with our clients in Asia offering new possibilities to get their most valuable stones certified by SSEF. Apart from the new SSEF shuttle leaving Hong Kong every week for smooth delivery of gemstones and jewellery to the SSEF laboratory in Basel, we constantly developing our presence in Asia with regular SSEF on-site services.

On-site service in Bangkok

As a first step, the SSEF established an office in Bangkok at Silom Road very close to the gem trade district, where we offer three to four times a year the SSEF on-site certification service for gemstones. Equipped with our mobile instruments and spectrometers, every gemstone is meticulously analysed before certification. If you wish to profit from this service, please contact SSEF at gemlab@ssef.ch to receive our newsletter or check our website www.ssef.ch, on which our on-site services are announced.

Our next on-site service in Bangkok is scheduled for the **14 – 19 January 2008**. If you would like to make an appointment in advance, please contact SSEF.

Location:
SSEF Swiss Gemmological Institute
c/o. Premacut Ltd
Maneesap Building II
Floor 7, Room 703 & 704
41/5-7 Trok Wate (Silom 19)
Silom Road, Bangrak
Bangkok 10500

Contact: during office hours 9 am to 17 pm
tel. +66 (0)2 635 28 44
fax. +66 (0)2 635 27 44
local mobile +66 (0)84 467 71 30
e-mail gemlab@ssef.ch



SSEF in
Bangkok. ©
SSEF 2007

New: SSEF in Macau

In beginning of January, SSEF will be present at the 1st Macau Jewellery and Watch Fair, held at the Venetian in Macau from 10 - 13 January 2008. Our booth L43 is located well in the centre of the main Hall D. Similar to Hong Kong, we offer fast and professional on-site certification for your jewellery items at the Fair.



New: SSEF in Taiwan

End of January, the SSEF will also put its stamp on Taiwan, one of the most important gem markets in Far-East. Prof. Henry A. Hänni and Dr. Michael S. Krzemnicki from the SSEF Swiss Gemmological Institute are available to test your important coloured gemstones on-site in Taipei from **Monday 21st to Friday 25th January 2008**.

Location:
SSEF Swiss Gemmological Institute
c/o. Ocean Sky Gems International Ltd.
4F, No. 228, Sinhu 2nd Rd, Taipei, Taiwan

Contact during office hours 9 am to 17 pm
(21-25 January 2008)
Office: 886-2-2790-7308
Fax: 886-2-2796-8277
e-mail gemlab@ssef.ch

New: SSEF Shuttle

In collaboration with Malca-Amit, we offer our clients in New York and Hong Kong since December 2007 a weekly shuttle service.

The shuttle service includes:

- Temporary clearances in & out in New York or Hong Kong and in Switzerland
- Pick up and delivery in New York or Hong Kong
- Swiss customs duties & VAT guarantee fees
- Airfreight valuable cargo under our consolidation

you will profit from:

- Swiss quality certification of your most valuable items at the SSEF
- Your gems are back in your hands within 10 days
- Insurance: We propose to you interesting rates for your shipments under full liability.
- Customs: We take care professionally of all customs issues.
- Cost: You profit from a significant reduction in your shipping costs. Sending a higher number of

items per package will reduce the costs per item further.

By using our new shuttle service, your diamonds, coloured stones, pearls and jewellery will be shipped smoothly to SSEF, which offers you first class gem testing services. For further information visit our website: www.ssef.ch or contact SSEF at gemlab@ssef.ch



SSEF is currently testing a new XRF unit. © SSEF 2007

Replacement of the old XRF Instrument at SSEF

X-ray fluorescence (XRF) is the standard method for chemical analysis of gemstones and pearls. Each item sent to SSEF Swiss Gemmological Institute for certification is analysed by XRF. Apart from the chemical main constituents, XRF is providing trace element concentrations which enable us to conclude on many aspects of gem identification, treatment detection and especially origin determination.

The XRF instrument supports us:

- To identify synthetic stones
- To detect pearls dyed with silver-nitrate
- To identify a material (e.g. Paraiba tourmaline)
- To distinguish saltwater from freshwater pearls
- To determine the origin of coloured stones

The XRF instrument by Fischer presently used at SSEF is 18 years old. After this long period, our XRF needs to be replaced by a new and up-to-date instrument. The new XRF instrument will be designed especially after our needs. It will provide us with more flexibility for chemical analysis, faster analytical time, the possibility to make spot analysis controlled by a camera system, and a easier and more comfortable software.

The SSEF Swiss Gemmological Institute would like to thank the trade members, which have by their generous donation contributed to the purchase of the new instrument.

CIBJO News 2007

In March 2007, the 84th CIBJO Congress was held in Cape Town, sponsored by the Jewellery Council of South Africa. Forty international delegations of the jewellery trade met for the first time in Africa. After the opening ceremony and the welcome addressed by Dr. Gaetano Cavaleri, President of CIBJO – The World Jewellery Confederation, the sessions continued with speakers such as Mrs Phumzile Mlambo Ngcuka (Deputy President of the Republic of South Africa), Dr. Hanifa Mezoui (Chief NGO Section/DESA Department of Economic and Social Affairs at the United Nations), Mr. Nicky Oppenheimer (Chairman of the De Beers Group), Abbey Chikane (Chairman of the Jewellery Council of South Africa), Mr Ernest Blom (President of the World Federation of the Diamond Bourses), and Mr. Eli Izhakoff (President of the 'World Diamond Council'). Mrs Phumzile Mlambo Ngcuka asked the trade to play an active role in developing a sustainable trade in African countries that supply a large part of our industry's raw materials.

A complete and informative marketing guide for retailers is now available, as a hard copy (please order directly at CIBJO) or in a download version (see www.cibjo.org).

On the CIBJO website, you may also download the three parts of the blue book (diamonds, coloured stones, pearls).

LMHC News 2007

This year, LMHC met twice. In March, the first meeting was hosted by SSEF in Basel and in October the second meeting was hosted by AGTA in New York.

Among many other topics, the following main points were put on the agendas:

- Completion of the emerald section of the manual.
- Description of corundum heated at high temperature in presence of a cobalt and lead bearing flux.
- Composite material made of ruby fragments stabilized by lead glass.
- Defining a Paraiba colour master series.
- Production of a pink sapphire to ruby colour master series.
- Completion the Padparadscha sapphire colour master series (threedimensional colour space).



How to form a Diamond master series

Whenever an institution needs a CIBJO diamond master series, a large quantity of diamonds is submitted to SSEF to establish an equivalent of the CIBJO diamond master series C1.

Among the submitted diamonds, only a few will meet the defined criteria to be included in such a new master series. Because the new master series will be used to determine the colour grade of other diamonds, it is important that each master stone has the same colour than its original CIBJO C1 master stone and is fitting well-defined specifications.

1. Comfortable for colour grading

For a comfortable colour grading, any diamond master shall be a round brilliant of 0.6 ct or more and show no other colour hue than yellow. The crown height shall be less than 17%. The girdle shall be faceted or polished. The finish of the cut shall be at least good. The presence of possible inclusion shall not affect the colour and shall not be visible to the naked eye when looking at the stone through the pavilion side. The fluorescence shall be none or possibly slight for J and L masters.

2. Colour Grade Precision

In the trade, the colour of a diamond is expressed by terms such as "exceptional white (E)". However, not all "exceptional white (E)" diamonds will show exactly the same colour. This is, because each diamond fitting inside a colour range defined by two adjacent master diamonds will be given the colour grade from that range.

3. International Master series

The CIBJO C1 diamond master series was formed by comparison to the original GIA diamond master series. It consists of seven master diamonds for D, E, F, G, H, J and L colour grades. Of course, each diamond of the CIBJO C1 master series meets the above listed criteria. The weight of each C1 diamond master is more than 1ct.

Because a diamond master defines the limit between two colour ranges (e.g. the limit between 'D' and 'E' grades), the master may take the name of either the better grade or lower grade (e.g. 'master D' or 'master E'). By definition, a CIBJO master diamond is named after the better grade (e.g. the master diamond, which defines the limit between 'D' and 'E' grades is named 'D master' at CIBJO).

4. Colour comparison

When establishing a new diamond master series for a client, the SSEF is first checking, if the submitted diamonds meet above described criteria.



The original CIBJO C1 diamond master series at SSEF.
© SSEF 2007

Afterwards, each diamond is colour graded independently by at least three diamond experts at SSEF using the CIBJO C1 diamond master series. The grading results of the three experts are then compared:

1. In terms of colour (i.e., does the graded colour fit to that of a CIBJO C1 diamond master or is it between two C1 diamond masters?),
2. In terms of colour shifts.

Only when the results of the experts are equal in terms of colour and when any possible shift is so small that it is still acceptable, we will consider the submitted diamond as a diamond master.

After having established a number of such diamond master series, our statistics show that only one of 10 diamonds, submitted specifically for this purpose, do meet a the criteria to become a diamond master. As a consequence, the establishing of a new diamond master series is a time-consuming and expensive challenge for both, the client and the SSEF. However, the number of clients which have already ordered such a master series shows, that this service is important for other laboratories or trade members.

Small Diamond Testing at SSEF

SSEF is involved in the quality control of small diamonds in three different aspects:

1. Some companies send all their small diamonds for testing.
2. Some companies already have an internal quality control. They regularly send a part of their lots (already checked or not) for an external control to the SSEF. By using our service, the company ensures that their internal quality control is stable.

3. Many companies take courses at the SSEF: Either the one-week Basic Diamond Course about grading of diamonds or the two-days Advanced Diamond Course for small diamonds. The participants of these courses have a better understanding of the product they deal with.

In the previous SSEF Facette (No. 14), we have illustrated that the quality control of small diamonds is a challenge in two aspects. First, because of the large quantities of diamonds submitted at for testing (e.g. a lot of 25'000 diamonds), and second, because of the small size of each single stone (e.g. 1.3 mm in diameter).

The quality control of a submitted lot of diamonds is based on a representative sampling. Any lot of diamonds is first tested to make sure that it is composed with natural diamonds only. Please note: among 500 000 small diamonds checked in 2007, SSEF identified 3 Cubic Zirconium Oxides! This shows that checking the authenticity of the submitted lots is important.

As already announced previously, SSEF will slightly adjust the calculation method for the cut quality grade of small diamonds in 2008. This will enable us to better separate the top quality cuts from the high quality cuts, following the request from the trade. Starting from 2008, any lot composed of more than 6 "sub-lots" will be sent back with the report of the sampling and not anymore with the report of the whole lot.

The SSEF is glad to announce that two new clients have started to use our quality control service on a regular base in 2007. These clients are very important and well-established members of the watch and luxury industry.

For any information about this highly specialised service, please contact SSEF.

SSEF Alumni activities

2007 was again an active SSEF Alumni year. Many of our members joined us at three lectures we organised during the year. In April, our first speaker, Mr. Fredrik Schwarz, Senior Jewellery Specialist at Christie's in Berlin gave a talk entitled "Gone by the wind... The Jewels of the Yusupovs, the Princess Vladimir and the Russian Crown Jewels". Based on his

profound knowledge on jewels of historic and Royal provenance, he showed the SSEF Alumni how history can change in a moment the fate of incredibly rich jewellery collections.

Our next guest-speaker in May 2007 was Laurent Cartier from the university Basel, who gave an insight into his extensive travels to Africa in his talk about diamonds in West Africa entitled "The diving diamond miners of Sierra Leone". The SSEF Alumni members could get a lot of first hand information about the current situation in the country and also get a different look on the negative "hype" about diamonds from West-Africa. In November, Roland Schlüssel from Pillar & Stone Int. gave a lecture about Mogok – a Journey to the World's most beautiful Rubies and Sapphires. For many years he has travelled the world and especially Myanmar in the search of the ultimate gemstone. He presented a selection of his most beautiful pictures and new information about the actual situation in Myanmar, as he had just return from the country some weeks ago. On our website www.ssef-alumni.org you find more informations about SSEF Alumni. The last SSEF Alumni newsletter (download from website) highlights the diamonds from Sierra Leone and a journey to Myanmar (Burma).

SSEF would like to thank again Mr Leon Ascot, President of SSEF Alumni for his enthusiasm and great work organising the SSEF Alumni events. Thank you Leon!



Diamond miners in Sierra Leone. Reproduction kindly permitted by Laurent Cartier. © 2007

SSEF around the globe...

2007 has been a very active year for SSEF. Not only have we made the best turnover in terms of reports and services. The SSEF has also made many turnovers in travelling around the globe.

In January 2007, Prof. Henry A. Hänni visited pearl farms in Alyui Bay Pearl Farm, Irian-Jaya (Papua-New Guinea). In February, SSEF was present at the Inhorgenta in Munich. In March, Prof. H.A. Hänni and Dr. Michael S. Krzemnicki were in Bangkok, testing gemstones at our office with our mobile laboratory equipment. From 10-15 March, Jean-Pierre Chalain was participating at the CIBJO Congress, followed by a organised trip to the gold, platinum and diamond mines in South Africa (see www.ssef.ch/en/news/pdf/Afrique_du_Sud.pdf). Pierre Lefèvre gave a talk at the University in Liège (Belgium), entitled "Gemmology - mineralogy for the luxury". In May, the Dr. M.S. Krzemnicki and Pierre Lefèvre were invited speakers at the annual meeting of the Swiss Gemmological Society SGG on Jade and its imitation and on sapphire mining in Pailin (Cambodia). Prof. H.A. Hänni was presented the ICA Lifetime Award at the ICA Cogress in Dubai. Also in



Dr. Michael S. Krzemnicki after his talk in Hong Kong together with Mr. Louis Lo, Chairman of the Gemmological Association of Hong Kong (GAHK).

May, the SSEF was present in Geneva during the auction sales. In June, the SSEF gemmologists participated at the First European Gemmological Symposium, organised by the German Association of Gemmology. Prof. H.A. Hänni gave a talk about recent developments in pearl testing. End of June, our "flying gemmologists", Prof. H.A. Hänni and Dr. M.S. Krzemnicki were again one week in Bangkok, offering our SSEF on-site testing service. In July, J.-P. Chalain participated at the Diamond Conference in Warwick (UK), presenting a poster on the 648 nm photoluminescence peak in diamonds. Prof. H.A. Hänni and Dr. M.S. Krzemnicki were participating at the 30th International Gemmological Conference IGC in Moscow. Prof. H.A. Hänni talked about corundum treatments and recent developments in pearl testing, whereas Dr. M.S. Krzemnicki gave a presentation about LIBS and LA-ICP-MS analyses



Dr. Thomas Lind, ICA vice president is handing over a commemorative plaque to Prof. Hänni in Dubai at the ICA gala dinner in May 2007.

of gemstones. End of August, SSEF was again one week in Bangkok for on-site service. Following this, Dr. M.S. Krzemnicki gave a special course on the application of UV-Vis, FTIR and Raman for the gemmological laboratory of the Directorate of Precious Metals and Gemstones in Bahrain.

End of September, the SSEF was again present with Dr. M.S. Krzemnicki, P. Lefèvre, and Petra Niggli at the Jewellery and Watch Fair in Hong Kong. Dr. M.S. Krzemnicki was invited speaker at the seminar of the Gemmological Association of Hong Kong and gave a lecture about "Increasing Consumer Confidence with the use of LA-ICP-MS for gemstones".

In October, Dr. M.S. Krzemnicki was in New York, participating at the LMHC meeting at the AGTA Gem Testing Center. End of October, J.-P. Chalain and P. Lefèvre were visiting Dr. Jocelyn Achard at the LIMHP (University Paris 13) to get insight in the most recent CVD diamond synthesis. Following this visit, J.-P. Chalain participated at a two days seminar of Vacheron Constantin in Paris, whereas Prof. H.A. Hänni was invited guest-speaker at the annual Gem-A Conference in London, talking about "how to make a cultured pearl". In November the SSEF was again in Geneva during the auction sales. In December, the SSEF team is now finally all staying in the laboratory! But the race will go on also in 2008....

Prof. Hänni receives distinction from the ICA

During the congress of the International Coloured Gemstone Association ICA in Dubai in May 2007, Prof. Henry A. Hänni was presented with a "Lifetime Achievement Award by a grateful industry in recog-

dition and appreciation for a lifetime of distinguished service to the coloured gemstone industry worldwide" from ICA. ICA is the largest international body of gemstone producers and dealers. The distinction is given as a tribute for significant and meaningful contributions to ICA and to the growth of the international coloured gemstone industry and trade. Henry Hänni participated at the Dubai conference as a panel speaker on a discussion on consumer's confidence.

European Gemmological Symposium

A new series of public international conferences in gemmology has been launched. Among a number of national gemmological associations it was agreed to come closer in order to establish a European family of gemmologists. Probably with GemmoBasel in 2005, the spirit was born for an annual conference of all those interested to meet the leading gemmologists in Europe. The conferences are organised by national associations along with their annual meetings. The European Gemmological Symposium would thus hop from one European city to another, every year the European gemmologists would be updated in another country. The proposed schedule is Idar-Oberstein (2007), London (2008), Switzerland (2009), Paris (2010), ...



Prof. Hänni at the European Gemmological Symposium in Idar-Oberstein, June 2007.

The first European Gemmological Symposium was organised in Idar-Oberstein by the German Gemmological Association when they celebrated their 75th anniversary in June 2007. This association has greatly contributed to the education of professionals in giving them sound gemmological knowledge. The leaders of the association have spanned over three generations from Prof. Schlossmacher, Prof. Bank and Dr. Lenzen to Drs. Lind, Henn and Milisenda. The latter invited speakers to report on gemstone research, trade and art. The conference was held in the city theatre in a comfortable atmosphere. Abstract of the talks are published in a recent issue of the Journal "Gemmologie" (Zeitschrift der Deutschen Gemmologischen Gesellschaft, Vol. 56, Issues 1-2).

The upcoming European Gemmological Conference will be held in conjunction with the 100th anniversary

of the Gemmological Association of Great Britain (Gem-A). To be held in October 2008, the program will be again exciting and informative for all interested in gemmology. An event that you must include in your agenda. For further information, please contact Gem-A at information@gem-a.info

30th IGC Conference in Moscow

The International Gemmological Conference is a meeting of selected members, representing their country in an international forum of professional gemmologists. Three years after the splendid conference in Wuhan (China) the delegates met again in July 2007 in Moscow to exchange actual gemmological knowledge. Two members of SSEF, Prof. Dr. H.A. Hänni and Dr. M.S. Krzemnicki participated at the IGC Conference in Moscow. During one week, a large number of short presentations were given. A short time slot of 20 minutes per talk for the international speakers enabled all the Russian guests to deliver their talks, mainly in Russian. That the simultaneous translation of the papers was not possible, that coffee powder during the breaks was short and that visits of museums during the conference went along with much waiting and frustration was expected by all those who did not attend the conference. However, the diamond crystals, and the gold and platinum nuggets we saw in the Kremlin museum were highly impressive. We could meet many colleagues from all over the world and discuss our latest research with them. The scientific programme contained talks about diamond, coloured stones, pearls, gemstone mining, instrumental developments, and analytical pitfalls. We would like to thank the organiser, Prof. Vladimir Balitsky, for the huge work, which was very much appreciated



Visit us in 2008 for On-Site SSEF reports

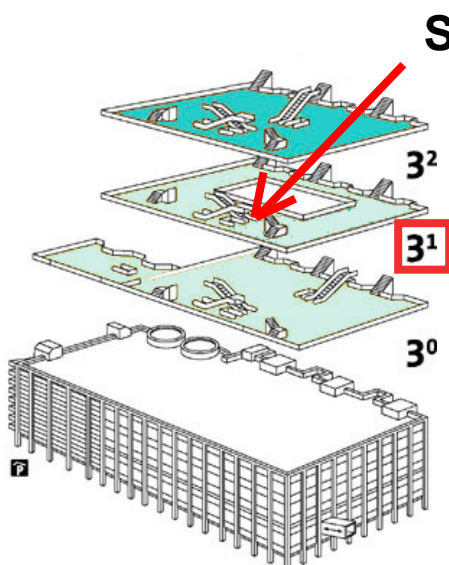
In 2008 we will be available at the following events:

Macau	10 – 13 January 08
Bangkok	14 – 19 January 08
Taipei	21 – 26 January 08
Inhorgenta Munich	15 - 18 Feb 08 (no reports)
Basel World 2008	3 – 10 April 08
Geneva Sales	10 - 14 May 08
Hong Kong Gem Fair	17 - 21 September 08
Geneva Sales	16 - 19 November 08

Further on-site services in Bangkok are not fixed so far, but will be communicated on our website and in newsletters.

Basel World 2008: Benefit from our 24h Express Service

During the BaselWorld (3rd to 10th April 2008), the SSEF offers once again our well appreciated Express Service: get a test report within 24 hours! We are located at the same place as in previous years in hall 3 (hall of elements) at our booth 3.1/N07 on the first floor (telephone at booth: +41 (0)61 699 51 29). We look forward to meet you there and to offer you a nice cup of coffee while you bring or pick up your stones.



SSEF

Close up: Luc Phan

More than a year ago we needed urgently a new force in the team, mainly to deal with the increasing number of small diamonds. We thus looked for a patient and delicate person with a friendly character. Further he should possess the capacity to sit calmly in the dark of the laboratory and doing the work precisely and accurately. With Mr Luc Phan, French citizen with Vietnamese roots, we found a very valuable colleague for our lab team. He quickly learned the procedure of small diamond testing and advanced to diamond grading,



too. He is a perfect gemstone photographer and produces most of the pictures for test reports. That the former gymnastic teacher found his way to the SSEF laboratory and is about to metamorphose to a gemmologist is a lucky strike for us.

Farewell to Corinne Grass

End of January 2008, our very efficient, highly estimated and permanently motivated secretary Corinne Grass will leave the SSEF team due to higher forces. Marriage and relocation are the reasons for the change what appears to be a happy turn in her life and a bitter loss for her colleagues who remain in the lab.

We welcome Niklaus Bieri in the Foundation Board

Mr Niklaus Bieri, CEO of Furrer Jacot in Schaffhausen, was present at the last meeting of the SSEF Foundation Board in 2007. He will be elected as a new member of the Board in 2008. The SSEF



and the Foundation Board are glad to have found with Niklaus Bieri a new and dedicated Board member, who by his personality and his long-established experience in the jewellery industry will support the development of the SSEF in future.

Publications 2007

In 2007 we again published numerous articles in gemmological journals and trade magazines. For reprints, please contact SSEF (gemlab@ssef.ch)

Hänni, H.A. (2007) Cultured pearls terminology. Letter to the Editor, *Gems & Gemology*, Vol.43, No.2, 95

Hänni, H.A. (2007) Recent developments in pearl testing. *Z.Dt.Gemmol.Ges.* 56, 1/2, 23-24.

Hänni, H.A. (2007) A description of pearl farming with *Pinctada maxima* in South East Asia. *J. Gemm.* 30, 7/8, 357-365.

Hänni, H.A. (2007) Perlenzucht mit *Pinctada maxima* in Südost-Asien - ein Beispiel. *Z.Dt.Gemmol. Ges.* 56, 3/4, 83-96.

Hänni, H.A. (2007) A European Gemmologist's thoughts on Jadeite Jade. *J.Gemmol.HK*

Krzemnicki, M.S., Pettke T., Hänni H.A. (2007) Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS), a new method for gemstone analysis *J. Gemmol.GAHK (in print)*

Krzemnicki, M.S. (2007) Pink synthetic spinel colored by iron, *Gems & Gemology*, Vol. 43, No. 2, 178-179

Krzemnicki, M.S. (2007) Lead Glass-Filled Rubies with Hollow Bases Set in a Closed-Back Mounting. *Gems & Gemology*, Vol. 43, No. 1, 77-78

Krzemnicki, M.S. (2007) The origin determination of gemstones: Challenges and perspectives, *InColor, Winter Issue (3 pages)*

Schmetzer, K., Krzemnicki, M.S., Hänni, H.A., Bernhard, H.-J., Pettke, T. (2007) Gem-quality taaffeites and musgravites from Africa, *Journal of Gemmology*, Vol. 30, No. 7/8, 367-382

Schmetzer, K., Bernhard, H.-J., Dunaigre, C., Krzemnicki, M.S. (2007) Vanadium-bearing gem-quality tourmalines from Madagascar. *Journal of Gemmology*, Vol. 30, No. 7/8, 413-433

Chalain, J.-P. (2007) Un voyage à l'Afrique du Sud. *Le Bijoux (in French)*

Donations 2007

With the generous support of our donors the laboratory collection is growing every year. The SSEF would like to thank the following people, who have made donations of gemstones or instruments in the past year. We announce their names in recognition of their generosity:

- Adrian Veraguth and Pierre Grumser for important financial donations for our diamond research.
- Hans-Peter Husistein for a collection of cut gemstones for teaching purposes.
- Reto Theilkäs for a number of tourmalines from Afghanistan.
- Werner Spaltenstein for support with samples and informations from Tanzania and Madagascar.
- Alexander Leuenberger for pink, purple and yellow sapphires from Madagascar.
- Mie mie Tin-Htut (Bangkok) for rubies and sapphires from Burma.
- Johannes Hunziker for an imitation of amethyst.
- Mr Thiebeau (Cartier) for a CZ with corrosion
- Ruppenthal GmbH for a strand of dyed Chinese freshwater cultured pearls.
- Michael Bonke for a selection of Red Sea cultured pearls.
- Jörg Gellner for some "Chocolate" treated cultured pearls
- V. Zancanella for a book about tanzanite
- Herbert Horovitz for some chips of a diamond
- T. Hochstrasser, for numerous non-nacreous and nacreous natural pearls and shells

With the generous support of our donors the laboratory collection is growing every year.

The SSEF Foundation Board:

would like to thank our donors, supporters, friends, clients and collaborators of SSEF

In the SSEF Swiss Gemmological Institute in Basel, highly specialised gemmologists work and do research in gemmology and mineralogy under the lead of Prof. Dr. Henri Hänni, Director, Dr. Michael Krzemnicki, Deputy Director and Jean Pierre Cha-

lain, Head of the Diamond Department. The SSEF Swiss Gemmological Institute is part of the Swiss Foundation for Gemmological Research.

Scientific research needs ingredients, such as intelligence, the appetite for new findings, and the appropriate instruments. For many years, a 10x loupe and binoculars are no more enough. Highly sophisticated instruments are essential today for research and analyses. And there, the SSEF is often at the limits of its financial possibilities.

The recipe of the successful SSEF Foundation with its gemmological institute is based - no doubt - in the serious work of the laboratory since many years, loyal clients, who get SSEF certificates on a regular base, the number of annual supporters and members of the SSEF, and last but not least, the generous donors and "Friends of the SSEF", who supported from time to time on an impressive scale the SSEF. Due to the "Friends of the SSEF", it was possible to acquire new sophisticated and expensive instruments for gem testing whenever it was necessary.

A new invitation started in November 2007 to support the financing for a new state-of-the-art X-ray fluores-

cence instrument (see page 13). We already found 13 supporters, who are ready to transfer over CHF 90'000. The Board of the Foundation SSEF thanks all of them and all other incoming supporters of this new fund-raising activity 2007/2008 for their generosity. The good interplay between the SSEF Swiss Gemmological Institute in Basel, the seven board-members of the SSEF Foundation (Stiftungsrat), the annual supporters and SSEF-members (more than 130), the regular clients and and last but not least, the donors of the past years and especially the last two months, made it possible for this "small" Swiss Institute to become a leading gemmological laboratory with world-wide reputation.

We would like to continue on this track, work in full independence and under the auspice of the Swiss government-control of foundations.

To all of you, I wish a successful year 2008, good health and all the best.

Marc-Alain Christen
President of the Board of the SSEF



The SSEF Team wishes all friends and customers a successful New Year 2008 and would like to thank you kindly for your continued support of the SSEF laboratory.