SSEF FACETTE No. 14

SWISS GEMMOLOGICAL INSTITUTE
SCHWEIZERISCHES GEMMOLOGISCHES INSTITUT
INSTITUT SUISSE DE GEMMOLOGIE

International Issue No.14, January 2007

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The Graff Ruby of 8.62 carats
with SSEF gemstone report
sold at Christie's St. Moritz
15 February 2006
for SFr. 4,724,000 / US$ 3,637,480
Image Courtesy of Graff Diamonds

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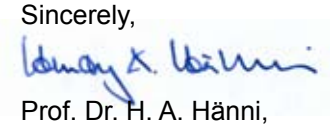
Dear Reader

I am sorry to have to inform all the French and German-speaking friends of Facette that, for reasons of time, we are no longer able to publish our house magazine in three languages. From now on, therefore, it will appear in English only. For some time now we, in the laboratory, have been afforded no time for literary composition at the end of the year. Editing Facette demands an additional effort from the team besides all the other work in hand. We will continue to mail you the SSEF Facette and hope that you will still be able to put its contents to good use. The past year has been characterized by consolidation: two of our staff have turned into valuable specialists. Pierre Lefèvre has become an all-round gemmologist and Corinne Grass has found that she is most comfortable with secretarial work. With our experienced staff we have had a very successful year. From January our team will include Sabine Häberli, FGA and art historian. After completing her doctoral thesis she will perfect her skills as a generalist in gemmological crafts.

A glance at the auction catalogues shows that the SSEF has been called to examine and certify the vast majority of important pieces of jewellery on offer. Our task is to examine and describe in detail the most beautiful natural pearls, large rubies, sapphires and emeralds and magnificent coloured diamonds. Our certificates provide the trade with security and give customers the proof and confidence they need in the jewellery. Our latest activity, namely the quality testing of small diamonds for the Swiss watch industry, goes to prove that the examination of large stones is not our only major concern. The majority of stones in this category are between 1 and 2 millimetres in size.
SSEF was again active in research this year. “Chocolate” pearls were examined to determine the origin of their colour. The origin features of Paraiba coloured tourmalines were investigated using highly sensitive mass spectrometry. Diamond research was conducted in the area of HPHT certification, with the added assistance of photoluminescence spectra.
A large number of specialists enrolled for, and again benefited from, the SSEF courses, either as part of their personal gemmological education or in a company training scheme. Companies and associations also continue to book training packages and SSEF experts travel to various towns and cities to deliver them.
The SSEF Foundation council has appointed Dr. Michael Krzemnicki as deputy director. It is clear from this nomination that Michael Krzemnicki will be my successor as director and head of the SSEF laboratory in three years from now. Until then I will strive to keep the SSEF laboratory on a steady course and steer it towards secure havens, starting now in the New Year.
I would like to take this opportunity to extend to you all my best wishes for your personal happiness, health and success in 2007.

Sincerely,



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

Chers Lecteurs

Je suis désolé d’informer nos amis de la facette SSEF de langue française et allemande que faute de temps, nous ne sommes plus en mesure de publier notre magazine dans les trois langues. Désormais, elle n’apparaîtra qu’en anglais. Depuis quelques temps, nous n’avons plus suffisamment de temps pour des compositions littéraires en fin d’année. L’édition de la facette demande à toute l’équipe des efforts supplémentaires en dehors des travaux de laboratoire. Nous continuerons à vous adresser la Facette et espérons que vous en ferez bon usage.
L’année passée a été caractérisée par la consolidation : deux membres de notre équipes se sont bien spécialisés. Pierre Lefèvre est devenu un gemmologue complet et Corinne Grass nous a prouvé qu’elle était une secrétaire efficace. Grâce a cette équipe expérimentée, nous avons réussi une très bonne année. Depuis Janvier, Sabine Häberli, FGA et historienne de l’art a rejoint notre équipe. Dès qu’elle aura terminé son doctorat, elle perfectionnera ses connaissances en gemmologie de laboratoire.
Un coup d’œil rapide aux catalogues des ventes aux enchères montre que la SSEF a été appelée pour certifier la grande majorité des pièces importantes. Notre tâche est d’examiner et de décrire les plus belles perles fines, les plus grands rubis, saphirs et émeraudes et les diamants de couleur les plus magnifiques. Nos certificats fournissent sécurité au marché et donnent aux consommateurs finaux certitude et confiance en la joaillerie. Notre dernière activité, le contrôle qualité de petits diamants, montre que nous ne sommes pas uniquement sur le marché des grandes pierres. La majorité des pierres de cette dernière catégorie ont un diamètre de 1 à 2 mm, elles sont destinées à être

montées en joaillerie et en horlogerie de luxe.
Cette année, la SSEF a été à nouveau active au niveau recherche. Les perles de culture 'chocolat' ont été examinées pour déterminer l'origine de leur coloration. Les caractéristiques de l'origine géographique des tourmalines 'Paraiba' ont été examinées par des mesures à haute sensibilité en spectrométrie de masse. Pour les diamants, des recherches de plus en plus fines ont été poursuivies en photoluminescence pour conserver une longueur d'avance sur le terrain de la détection des traitements HPHT.
Un grand nombre de spécialistes se sont inscrit et ont suivis les cours de la SSEF, soit à titre personnel soit dans le cadre d'une formation d'entreprise. Des entreprises et des associations continuent de réserver des cours globaux et les experts de la SSEF voyagent de ville en ville pour délivrer leurs connaissances.
Le conseil de fondation a nommé le Dr. Michael Krzemnicki sous-directeur. Il est claire que Michael Krzemnicki me succèdera au poste de directeur à la tête du laboratoire SSEF d'ici trois ans. D'ici là je m'efforcerai de maintenir le laboratoire SSEF dans un rythme effréné et de le guider vers les havres sûrs, à commencer par cette nouvelle année.
Je souhaite prendre l'occasion de vous adresser mes meilleurs vœux pour votre bonheur personnel, santé et succès pour 2007.

Sincèrement,
Prof. Dr. H.A. Hänni, Director, SSEF

Liebe Leser

Mit Bedauern teile ich all den französischsprachigen und deutschsprachigen Freunden der Factte mit, dass wir es aus Zeitgründen nicht mehr schaffen, unser Hausblatt dreisprachig heraus zu geben. Sie wird also fortan allein in englischer Sprache erscheinen. Schon lange ist das Jahresende im Labor nicht mehr eine Zeit mit Raum zum Dichten. Das Schreiben der Facette verlangt vom Team einen zusätzlichen Einsatz neben all den anstehenden Arbeiten. Wir werden Ihnen die SSEF-Facette weiter zusenden und hoffen, dass Sie aus den Informationen trotzdem guten Nutzen ziehen können.
Das vergangene Jahr war durch Konsolidierung gekennzeichnet: zwei neue Mitarbeiter wurden in wertvolle Spezialisten verwandelt. Pierre Lefèvre ist Allround-Gemmologe geworden und Corinne Grass kennt sich nun bestens aus in den Sekretariatsarbeiten. Zusammen konnten wir 2006 ein sehr erfolgreiches Jahr erleben. Ab Januar 2007 wird Frau Sabine Häberli, FGA und Kunsthistorikerin neu unser Team ergänzen. Nach Abschluss ihrer Doktorarbeit wird sie als Generalistin das gemmologische Handwerk perfektionieren.
Ein Blick in die Auktionskataloge zeigt, dass bei SSEF die wichtigsten Schmuckstücke zertifiziert werden. Die schönsten echten Perlen, grosse Rubine, Saphire und Smaragde sowie prächtige Farbdiamanten werden bei uns gründlich untersucht und beschrieben. Die Zertifikate geben dem Handel Sicherheit und dem Kunden Vertrauen in die Juwelen. Dass wir aber nicht nur grosse Klunker untersuchen, zeigt unsere neue Aktivität in der Qualitätsprüfung von Kleindiamanten. Die meisten Steine dieser Kategorie sind zwischen 1 und 2 mm gross und werden später in Schmuckuhren gefasst.
Die Forschung bei SSEF war auch in diesem Jahr wieder aktiv. Braune Zuchtperlen (sog. Chocolate pearls) wurden auf ihre Farbursache hin untersucht. Die Herkunftsmerkmale von Paraiba-farbigen Turmalinen wurde mit der hochempfindlichen Massenspektrometrie gemessen. Die Diamantforschung spielte sich im Bereich des HPHT-Nachweises ab, Photolumieszenzspektren helfen weiter.
Von den SSEF-Kursen konnten wieder zahlreiche Teilnehmer profitieren, sei es im Rahmen ihrer persönlicher gemmologischen Ausbildung oder in einem Firmenkurs. Immer wieder buchen auch Gesellschaften oder Verbände ein Ausbildungspaket, und ein SSEF Experte begibt sich in die betreffende Stadt, um den Kurs abzuhalten.
Der Stiftungsrat SSEF hat Dr. Michael S. Krzemnicki zum Vize-Direktor ernannt. Damit ist klar, dass Dr. Krzemnicki in drei Jahren meine Nachfolge als Direktor und Leiter des SSEF Labors antreten wird. Bis dann werde ich noch mein Bestes geben, das SSEF-Labor auf Kurs zu halten und in eine sichere Zukunft zu lenken. Diese beginnt nun mit dem Neuen Jahr 2007, zu dem ich Ihnen alles Gute wünsche.

Prof. Dr. H.A. Hänni, Direktor SSEF

SSEF membership fee:

Dear SSEF Client

Do you already know that the SSEF Membership fee is due on February 28, and a reduction of approx. 20-30% on the normal tariff list is granted to registered members only?

Impressum:
Annual SSEF publication by:
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Quality Control for Large Quantities of Small Diamonds

Quality Management for the Swiss Watch Industry

The Swiss watch Industry is renowned for the top quality of its products. Not one famous luxury company would market, under its own brand name, a watch not “Swiss Made”. If “Diamonds are a girl’s best friend” they are also the close companions of luxury watches, and therefore each year the Swiss watch industry consumes a giant quantity of small diamonds. The SSEF Swiss Gemmological Institute checks the quality of these gemstones because it is vital to the Swiss watch industry that the quality of their diamonds match that of their watches.

From a gemmological perspective, such checks represent a double challenge, first of all because of the small size of the diamonds and secondly because of the very large quantity to be verified.
To assess the quality of a brilliant, for which the diameter may range from 0.7 mm to 2.60 mm, the criteria defined for the grading of larger diamonds must be transposed as accurately as possible, and an excellent grading practise of large diamonds is mandatory.
Of course, the criteria remain the same: colour, clarity and cut. No concession should be made when transposing these criteria from the large diamond grading system to the quality control of small diamonds.

Only great care must be taken in the disclosure of results. Indeed, there is no doubt that when comparing the colour of a 1 mm diamond to a master diamond, the eye sensitivity is much weaker than when comparing the same master stone to a 10 mm diamond. The margin of error must be incorporated into the disclosure. This practise is well known to the small diamond diamantaires since most of them still use, on purpose, the Scandinavian colour grading system (River, Top Wesselton, Wesselton, Top Cape, etc.) which integrates two traditional colour ranges (e.g. “River” covers both the “Exceptional white + (D)” and the “Exceptional white (E)” of the CIBJO colour scale).

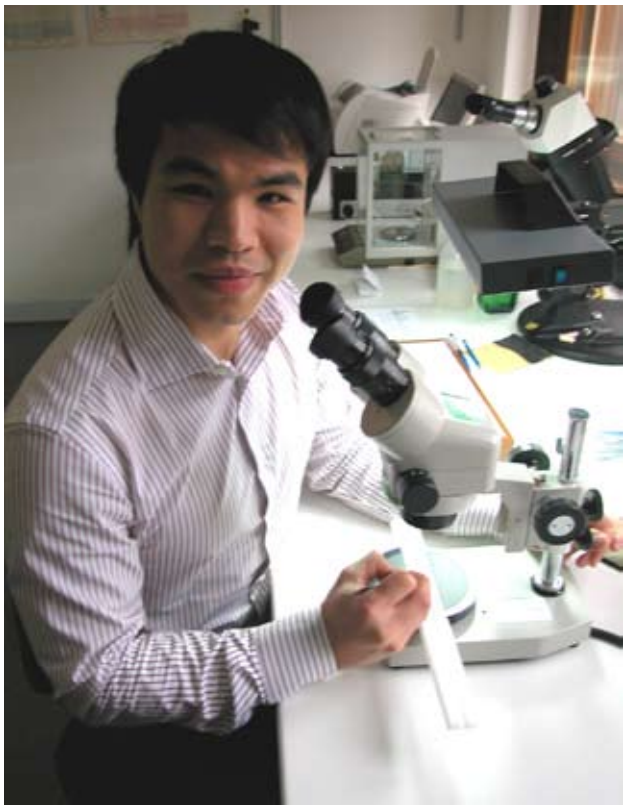
This paper will consider how to solve the problem of large quantities of stones submitted for quality control. Indeed, when a lot of 125’000 brilliants is sent for quality control, a special system must clearly be set up. It is illusory to believe that an assessment will be made for each diamond. Firstly because, in our industries’ pipeline, the lot was previously sorted for its quality by professionals (quality control is not a sorting process) and secondly because an accurate quality control on 125’000 diamonds would not be profitable economically.

Sampling

Dealing with the quality control of large quantities is not specific to the diamond industry. For a long time the quality of many products has been checked after mass production and just before sale: computer microprocessors, pharmaceutical pills, surgery gloves, etc. Providing, firstly, that the production of the lot is homogeneous, and secondly, that the points to be checked are perfectly defined, the quality control of a whole lot can be based on a limited but representative sampling of the lot. For the quality control of lots of small diamonds the statistically representative sampling that applies is given by the AINSI norm ZI-4-1993 level II and, the DIN ISO norm 2859 part 1- general level of level II (see table 1).
Therefore the quantity to be checked for a given lot is dramatically reduced and the assessment of colour, clarity and cut can be processed in excellent conditions. Based on the result of the sample examined, the client will later apply a specific strategy to decide whether his lot conforms to his required standards or not. To appreciate the pertinence of this strategy, let’s take the following example.

A lot of 3’050 small diamonds is submitted for a quality check. According to the sampling policy (see table 1), 125 diamonds are randomly sampled. After a meticulous inspection of the 125 samples by two different graders (SSEF internal policy), a part of the report states:

- Colour: from D/E to H, majority: G,
  stones with colour worse than majority: 5
- Purity: Loupe Clean to VVS: 119; VS: 6
- Cut: Very Good: 82; Good: 40; Medium: 3



Luc Phan, our new staff member working with the small diamonds SSEF receives for testing.

Acceptable Quality Level (AQL)
At this stage, the work of the gemmological laboratory is finished. So now, let's see how the client may use the information reported above to decide whether the lot conforms to the quality policy of his company or not.
For the purpose of this example, let's say that this company desires to mount on its watches diamonds of a G colour at worst, of purity LC to VVS and of a very good to good cut. Further more, this company chooses to apply an AQL of 2.5 to each lot checked - in other words, the choice of this AQL reflects the degree of severity defined by the company.
The client then refers to table 1, and sees that, for a sampling of 125 and an AQL of 2.5 (in bold), the lot is accepted for each criterion.
If the company chooses an AQL of 1.5, the lot will be rejected because of the purity (6 defective stones in our example).

Companies may apply different strategies. There are some companies applying an AQL of 2.5 on the sum of defective samples for the three criteria, which is 5 (for colour) + 6 (for clarity) + 3 (for cut) = 14. This strategy is much more severe and, in our example, the lot would be rejected (even using an AQL of 4).

It is very important to be reminded here that the selection of an AQL is purely the company's choice. We see on table 1 that choosing an AQL of 2.5 instead of 1.5, changes the strategy of acceptance considerably.

So, this last choice, plus the decision to apply the AQL to the sum of two or three criteria, is of major importance. Another company may choose to apply an AQL to the sum of defective colour plus defective clarity and apply another AQL to the cut only. There are a multitude of possibilities.
Among them, choosing the same AQL for colour purity and cut is probably not evident and some companies consider that the AQL applied on the cut criterion might be smoother than that of colour and clarity.
Based on our assessment process, we recommend applying a separate AQL for the colour.
Once more, these choices are our clients' and they reflect their own strategy.
It clearly appears that for any given company, the consistency of its quality policy is determined by the definition and maintenance of a quality strategy over the long term.

Sampling plan		**AQL**							
Lot size	**Sample size**	*1*		*1.5*		**2.5**		*4*	
		Accept	*Reject*	*Accept*	*Reject*	**Accept**	**Reject**	*Accept*	*Reject*
91 to 150	20			*0*	*1*	**1**	**2**	*2*	*3*
151 to 280	32			*1*	*2*	**2**	**3**	*3*	*4*
281 to 500	50	*1*	*2*	*2*	*3*	**3**	**4**	*5*	*6*
501 to 1200	80	*2*	*3*	*3*	*4*	**5**	**6**	*7*	*8*
1201 to 3200	**125**	*3*	*4*	*5*	*6*	**7**	**8**	*10*	*11*
3201 to 10000	200	*5*	*6*	*7*	*8*	**10**	**11**	*14*	*15*
10001 to 35000	315	*7*	*8*	*10*	*11*	**14**	**15**	*21*	*22*
35001 to 150000	500	*10*	*11*	*14*	*15*	**21**	**22**		

Uncommon Minerals as Gemstones from Tanzania

During a field trip to East African with Werner Spaltenstein (Chantaburi), Prof. H.A. Hänni had the chance to visit several deposits and trading places. Besides the commercial gemstones known to come from this area, uncommon minerals of gemstone quality are repeatedly found. Although physical data can be measured easily, due to overlapping with

Fig. 1: Diposide rough and cut stones from Tanzania.
© H.A. Hänni, SSEF 2006

other minerals a safe identification often requires more scientific equipment than is usually available to traditional gemmologists. Some of the stones are found in their parent rock and their formation and origin is well documented. Others, however, stem from gemmy gravels, and their parent rocks were eroded hundreds of millions of years ago. These gravels were shed over a large area of former East Gondwana landmass. Later tectonic events have broken open that treasure trove and it is now split

Fig. 2: Chondrodite from Tanzania
© H.A. Hänni, SSEF 2006

Fig. 3: Kornerupine from Tanzania
© H.A. Hänni, SSEF 2006

Fig. 4: Musgravite from Tanzania
© H.A. Hänni, SSEF 2006

into deposits in Tanzania, Madagascar and Sri Lanka. Secondary deposits may thus produce similar stones as pebbles of rare gem minerals in all three regions. In Tanzania primary deposits are producing gemstones and secondary deposits from the old Gondwana treasury are also being worked. A few of these gemstones are presented here.

Fig. 5: Clinohumite from Tanzania
© H.A. Hänni, SSEF 2006

“Chocolate Pearls”:

A short report on treated brown cultured pearls

So-called “chocolate pearls” which were investigated for this study. © H.A. Hänni, SSEF 2006

After reading the latest news on brown cultured pearls with artificial colour, so called “chocolate pearls” we were impressed by the complexity of the story delivered to explain the new colour. Following different authors and rumours in the trade, one has to expect a biochemical intervention on the colour giving melanin molecules. Good quality Tahiti cultured pearls with too much colour are said to be used in order to detract and reduce colour from the surface. The colour is said “to be stable and deep inside, sometimes even the nuclei turn brown” (as reported in JNA June 2006 issue, page 60). This tends to give the consumers the idea that decolourised pearls are better than just stained ones.

It is now a difficult to believe that, on one side that the colour is lessened by sophisticated modification of melanin and, at the same time, to accept that the otherwise white bead in the centre of the pearl turns brown. However, such processes changing the colour of a pearl would end up in a treated colour, regardless of whether the colour is subtracted or added by simple staining. This is in line with the requirements of CIBJO nomenclature rules for the jewellery trade.

The SSEF Swiss Gemmological Institute was, for a long time, looking for test material to learn more about this chocolate mystery. Recently, we received five pearls from three different producers and could take the first steps in this research. The results are surprising and show that common sense is always helpful when mysteries intrigue people. Providing that the sources of our research material were correctly indicated, three different producers (one in England, one in Japan, one in Switzerland) are distributing dyed pearls with distinct colour concentrations in the outmost layer of the pearls. The thickness of the dyed layer is about 0.05 mm. The underlying part of nacre is grey to lighter brown, and not darker, as indicated in the propaganda material. This situation relates to simply stained pearls, as it has been commonly done with silver nitrate or today with more modern dyestuffs. The test for silver was negative on the four pearls of Fig. 1, so another colouring agent must be in use. Such a dying treatment would also transfer white or grey South Sea cultured pearls into “chocolate pearls”. It is thus not sure that all “chocolate pearls” in the trade are Tahitian. The fifth pearl in our investigation showed the characteristics of silver staining: Ag was identified by EDXRF.

Polishing or cutting of one of the investigated “chocolate pearls” revealed that the brown colour was only present at the surface of the dyed pearl

Future research has to follow, on a broader selection of “chocolate pearls”. The testing methods so far are microscopic and Raman-spectroscopic. A simple gemmological test is not yet available. But a tiny flat polished spot (e.g. around a drill hole) would show a colour concentration confined to a superficial layer. SSEF laboratory would welcome chocolate pearls for testing to increase our experience in this field. Contact us by e-mail: gemlab@ssef.ch. We are curious to learn if there are really dark Tahitian pearls that can be lightened in colour.

“Paraiba” Tourmalines from Brazil and Africa

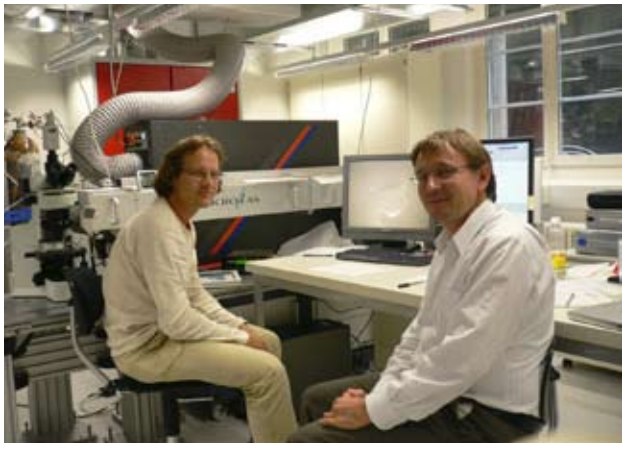
Origin determination based on LA-ICP-MS analysis of trace elements

So-called “neon-blue” copper bearing elbaite tourmalines (Paraiba tourmalines) are highly appreciated in the trade, especially when they originate from the classic mining area in Brazil (Paraiba and Rio Grande del Norte). After the recent discovery of very similar looking stones in Mozambique, origin determination became an issue for gem laboratories.

The SSEF was able to establish chemical criteria based on trace elements such as lead, gallium, bismuth, and others. Our study was kindly supported by the donation and loaning of a large number of cut and rough stones by Chico Bank (Germany) and Werner Spaltenstein (Thailand) and data from the laboratory of the German Gemmological Association DGemG in Idar-Oberstein. The samples were chemically analysed with ED-XRF, and more sophisticated techniques such as LIBS and LA-ICPMS.

Generally, the copper bearing elbaite tourmalines from Brazil, Nigeria, and Mozambique show quite a large overlapping of their chemical composition. However, careful data plotting reveals distinct chemical differences which allow us to separate the origin of these tourmalines in most cases.

Fig 2: Prof. Thomas Pettke and Michael S. Krzemnicki at the Geochemistry LA-ICPMS Laboratory, University of Berne (Switzerland). © M.S. Krzemnicki, SSEF 2006



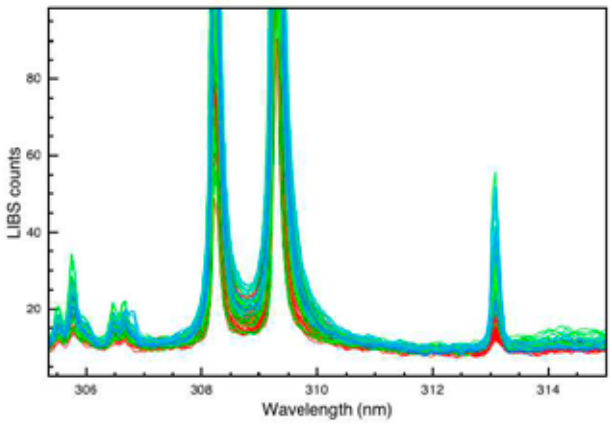


Fig 3: LIBS spectra of investigated Cu-tourmalines showing beryllium trace concentrations. © M.S. Krzemnicki, SSEF 2006

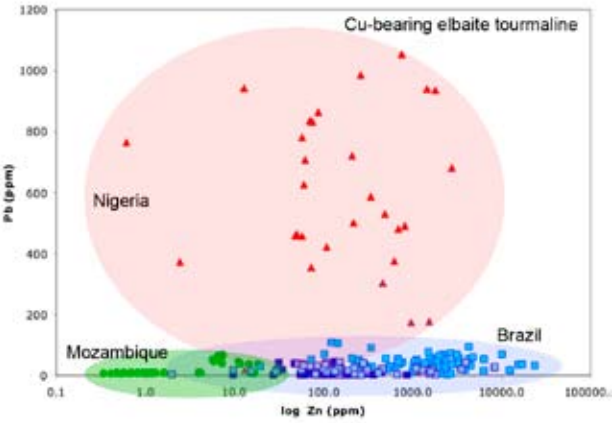


Fig 4: Diagram (Pb versus log Zn) of LA-ICPMS data (red: Nigeria, blue: Brazil, green: Mozambique). © M.S. Krzemnicki, SSEF 2006

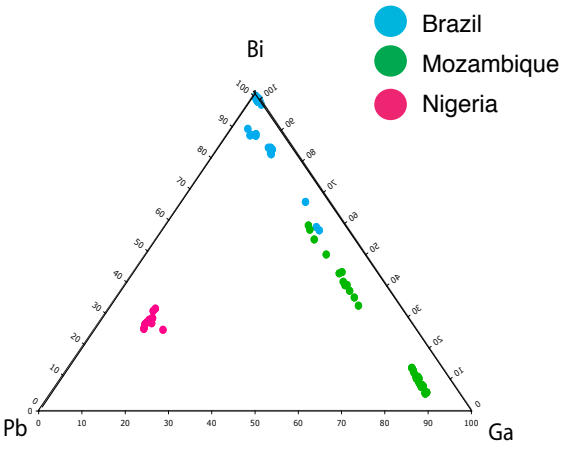


Fig 5: Triplot (Pb - Bi - Ga) of LA-ICPMS data (red: Nigeria, blue: Brazil, green: Mozambique). © M.S. Krzemnicki, SSEF 2006

SSEF Courses in 2007

Last year saw many course participants at the SSEF. In particular the courses on quality grading of small diamonds (see page 5) were booked out very early and we had to add several modules to cater for the high demand by the Swiss watch industry. In 2007, this course is being offered twice (21-22 May and 27-28 August 2007). For the training of a larger number of staff members, we are pleased to offer SSEF Company Courses, which may be especially designed to fit your requirements. Please contact SSEF with any questions concerning company courses (gemlab@ssef.ch, or tel. +41 (0)61 262 06 40).

Taking a short break during a SSEF company course © SSEF 2006

In 2007, the SSEF is again offering plenty of possibilities to enhance your knowledge of gemmology. The programme has been slightly adapted this year to include a very basic three-day seminar on diamonds, coloured stones, and pearls. These courses are open for anybody interested in the beauty of gemstones as an introduction in the field of gemmology. They are very well suited for goldsmiths and sales people in jewellery shops. This basic seminar will take place in March (19-21 March) and again in October (22-24 October).
For students, who would like to earn a diploma in gemmology, we offer the SSEF Basic Training Course (25 June - 10 July 2007) or the SSEF Basic Diamond Course (26-30 March or 3-7 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 covered in the basic courses can be studied more in depth.
In 2007 we are once again offering so-called “practical days”, which will take place 12th March, 4th June, 9th July, 10th September and 5th November. These days are aimed anyone interested in refreshing their skills and experience under guidance with gemstones from our large collection. You may even bring your own gemstones.
As in previous years, the SSEF is offering again its unique high-end Scientific Gemmology Course (13-17 August 2007, and 14-18 January 2008) and Scientific Diamond Course (8-12 October 2007), in which laboratory staff and well-educated gemmologists from all over the world are trained in the use of sophisticated methods of gemstone testing. Each of these courses takes one week. The participants (maximum 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 the SSEF: gemlab@ssef.ch (tel. +41-(0)61 262 06 40) or see our website www.ssef.ch (download our course programme as a pdf file!).

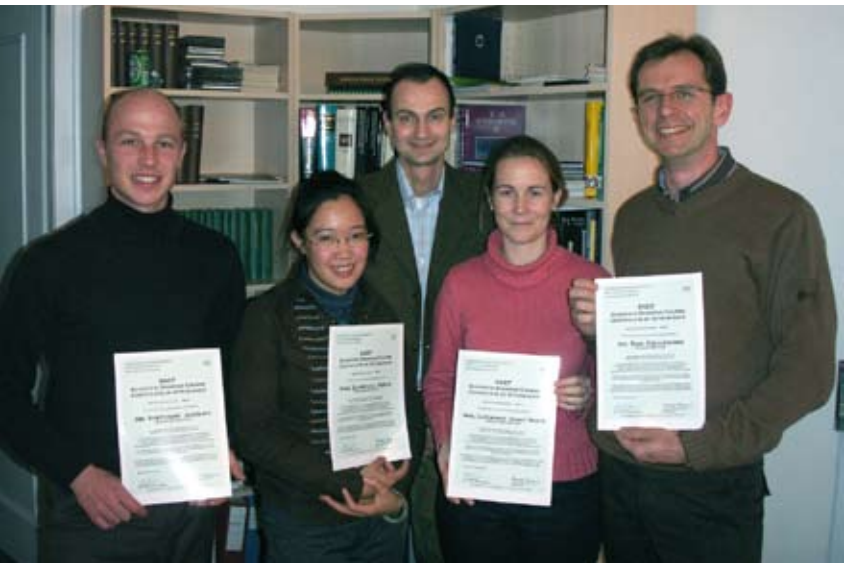
SSEF Basic Diamond Course participants (from right to left) Mrs Neva Hay, Mrs di Lullo, Mr Smiljkovic, Mr Perret, Mrs Heer, and Mr Wartenweiler. © SSEF 2006

SSEF Basic Diamond Course is a success!

After the success of last year, we are offering two one-week basic diamond courses (with diploma!) on 26-30 March and 3-7 September 2007.
During this course, the participants learn how to grade the quality of a diamond step-by-step. The course ends with a final exam.
Successful students receive the SSEF Basic Diamond Certificate. This course is aimed at people working in the jewellery and watch industry. Previous experience is welcome but not a requirement.
The course is recognised by the Swiss Gemmological Society (SGG). At this moment, we would like to thank the SGG for the loan of their diamond collection.
For information and application contact us by phone (+41 (0)61 262 06 40) or email (gemlab@ssef.ch).

Scientific Diamond Course

In April and October 2006 the SSEF carried out its Scientific Diamond Course (SDC). The participants Dr Tom Ceulemans, Stéphane Jacquat, Laura Wohland, Ryan Petrozello, Supreeda Porka, Catherine Verny-White, Riccardo Befi, and Animesh Sharma received the SSEF Scientific Diamond Certificate. This one-week course is a completion of the long-established SSEF Scientific Gemmology Course and brings the participants to the forefront of synthetic diamond and treatment identification. Up-to-date analytical equipment is demonstrated and the participants practise the various techniques themselves. The next SSEF Scientific Diamond Course will take place from 8 - 12 October 2007. The methods covered 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 the methods for themselves, and the course notes contain numerous spectra. They also contain two valuable tables, which summarise the “Defect Induced Vibrational Bands“ and the “Optical Bands“. A list of reference books is also given.
For further information contact the SSEF: gemlab@ssef.ch (tel. +41-(0)61 262 06 40) or see our website www.ssef.ch where you can download the detailed course programme.



The participants of the SSEF Scientific Diamond Course with their diploma: Mr Jacquat, Mrs Porka, Mrs Verny-White, and Mr Ceulemans. © SSEF 2006

Congratulations ...

SSEF Swiss Gemmological Institute wants to express its congratulations to the following people for achieving:

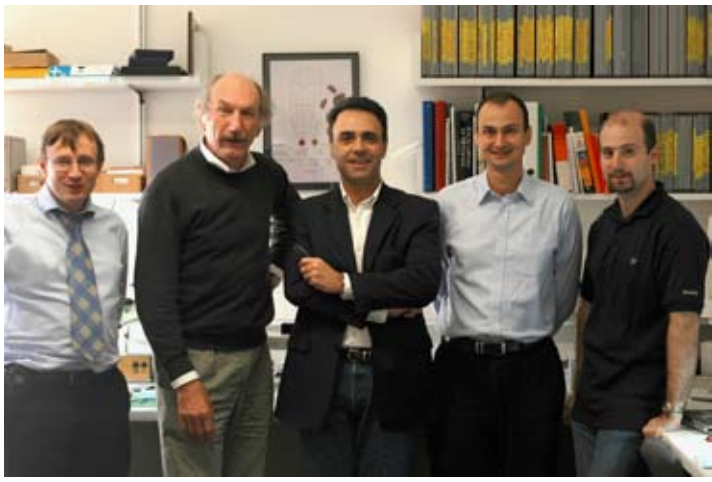
SSEF Basic Gemmologist Certificate:
- Florence Berezovsky, Genève
- Annette Buess, Omega SA, Biel
- Carole Wicht, Omega SA, Biel
- Christian Zweifel, Thalwil

SSEF Basic Diamond Certificate:
with distinction:
- Alessandra di Lullo, Genève

- Kathrin Heer, Bern
- Raphaël Perret, La-Chaux-de-Fonds
- Zoran Smiljkovic, Uster
- Hans-Ulrich Wartenweiler, Zürich

Only participants who pass the final exam receive the SSEF Basic Gemmologist or Basic Diamond Certificate. The qualification requires theoretical knowledge as well as practical skills in gemstone testing or diamond grading.

Advanced Gemmologist Certificate:
courses on treatment and origin of coloured stones
- Elizabeth Bussmann, Zürich
- Mirjam Mundwiler, Biel
- Hedley Prynn, Nürensdorf
- Karen S. Sampieri, Tiffany&Co, New York, USA
- Georges Amer, Chanel, Paris



Georges Amer (Chanel) together with Dr Michael S. Krzemnicki, Prof Henry A. Hänni, Jean-Pierre Chalain, and Pierre Lefèvre from SSEF. © SSEF 2006

course in small diamonds quality testing
- José Dinis, Châtelain G. + F. SA,
- Victor Pereira, Châtelain G. + F. SA,
- Fernanda Teixeira, Châtelain G. + F. SA,
- Gérard Lab, La Chaux-de-Fonds
- Gérard Besson, La Chaux-de-Fonds
- Sophie Girardet, La Chaux-de-Fonds
- Saïd Jabal, La Chaux-de-Fonds
- Catherine Racine, La Chaux-de-Fonds
- Patrick Zihlmann, La Chaux-de-Fonds
- Pascal Bobillier, Louis Vuitton

- Joris Engisch, Louis Vuitton
- Damien Fernier, Louis Vuitton
- Sophie Gachet, Louis Vuitton
- Vincent Littera, Louis Vuitton
- Raphaelle Voog, Louis Vuitton

SSEF Special Course UV-VIS-NIR:
- Pareek Subhash, Indian Diamond Institute, Surat

SSEF Scientific Diamond Course
- Dr Tom Ceulemans, Antwerp, Belgium
- Stephane Jacquat, Genève
- Laura Wohland, Tiffany&Co, Parsipanny, NJ, USA
- Ryan Petrozello, Tiffany&Co, Parsipanny, NJ, USA
- Supreeda Porka, Chiang Mai, Thailand
- Catherine Verny-White, Genève
- Riccardo Befi, AGTA, New York, USA
- Animesh Sharma, Indian Diamond Institute, Surat

We wish all successful participants a bright gemmological future!

Shaping the Future at SSEF

When Peter Giese retired from his work as an analytical technician, it was difficult to imagine a person who would be able to do the same job. Fortunately we found a person who fits that position well: Mrs Sigrid Recha, master in mineralogy (Freiburg University). She is now fully occupied in taking all kinds of spectra, so that the gemmologists, when they look at the stones, already have a firm idea of the instrumental test results.

Three years before the retirement of the current director of SSEF laboratory, Prof. H.A. Hänni, the SSEF Board members have been lucky enough to find a successor with the necessary qualifications among the lab staff. Dr. Michael S. Krzemnicki (FGA), currently director of education, was elected deputy director at the last board meeting. He will work closely with Prof. Hänni in the coming three years to ensure a smooth transition. Dr. Krzemnicki, who has been working for the lab since 1998, has built excellent relationships with customers (in German, French, Italian and English) and is a keen analytical gemmologist.
In order to have a fully powered lab in the future, the SSEF has appointed another gemmologist with special capabilities: Sabine Häberli (FGA) is an art historian who has worked for the SSEF occasionally in the past (GemmoBasel 2005). Her doctoral thesis is about gemstones in medieval church objects.
For six months we have had a very skilful man at the SSEF. Mr. Luc Phan is someone who has assisted considerably in small diamond testing with his meticulous working style and accuracy in the handling of small stones.

SSEF welcomes Horst Edenhofer in the Foundation Board

In September 2006, Mr Horst Edenhofer was elected as a new member of the SSEF Foundation Board. We are convinced that he will become an important team-player in the SSEF Foundation Board, based on his personality, his long-established experience in the jewellery and watch industry - until recently as director of Cartier Switzerland - and his current position as president of the “Association des Fournisseurs d’Horlogerie, Marché Suisse (AMS)“. Mr Edenhofer has replaced Mr Daniel Gallopin, who retired from the Board, which he joined in 1993.
The current members of the SSEF Foundation Board are: Marc Alain Christen, President, Berne; Charles Abouchar, Geneva; Horst Edenhofer, Fribourg; Thomas Frieden, Thun; Hanspeter Husistein, Geneva; Adrian Meister, Zurich, Ronny Totah, Geneva.

The three graces at SSEF

After nearly 6 years, in 2006 Mrs Sonja Schwarz left the laboratory administration to start her own business. The SSEF team would like to thank her for the outstanding effort she made during these busy times in our laboratory and we wish her good luck in her new business. Happily, we have been able to replace her smoothly with Mrs Corinne Grass, who together with Mrs Petra Niggli, takes care of all customer relations in the SSEF laboratory.

Mrs Petra Niggli, Mrs Sonja Schwarz, and Mrs Corinne Grass, the three graces at SSEF at our annual dinner in 2006. © M.S. Krzemnicki, SSEF 2006

Fei Cui Jadeite Testing in Hong Kong

It is always a surprise to people from the West, how highly appreciated and how well known jade is in Eastern countries. For this reason it seems that jade definition, testing and quality assignment in the East is as severe as the criteria for diamonds in the West. Indeed, Hong Kong auction catalogues show the unique qualities of emerald-like jade necklaces, carvings or bangles. However, there is also jade in the back streets of Hong Kong, treated, stained, and imitated by materials that are natural rocks, but not considered jade. The modern understanding of jade comprises two minerals: jadeite (pyroxene group) and nephrite (amphibole group). Even more modern understanding has concluded that jadeite is often in solid solution with cosmochlore and/or omphacite. A new standard of testing and terminology has been introduced in Hong Kong that takes this fact into consideration. It will hopefully spread and influence world wide jade nomenclature.
The main identification features measured are SG 3.34 (+0.06/-0.09) and RI 1.666-1.680 (+/- 0.008). For physical identification, refraction, density, absorption spectrum, and polariscope reaction, together with other measurements, are included the standard methods of Fei Cui (Jadeite Jade) identification. A testing procedure is not complete without an infrared spectrum of the sample. Wax or epoxy is quickly identified by the FTIR method. As well as the instrumental requirements of a jade testing lab, the human resources are of major importance. The jade testing gemmologist must know the testing procedures, the nomenclature and all the treatments and imitations.
The Gemmological Association of Hong Kong Ltd issued a booklet with the standard methods in 2006. The Hong Kong Laboratory Accreditation Service has asked Prof. H.A.Hänni to act as a technical expert for the testing of Hong Kong jade experts. Gemmologists from six laboratories in Hong Kong finally got the accreditation.

AGIL Gemmologists and testers after the procedure. © D. Mok, 2006

CIBJO News

This time, the annual CIBJO Congress was magnificently hosted in Vancouver. Due to weather, the organizers decided to welcome delegates in July; March would have been much colder! Many decisions were taken there. In particular, the laboratory commission presented several resolutions; all were adopted. Of a major concern for the SSEF, was the decision that the brand CIBJO will no longer be used on laboratory certificates. Consequently, this year the SSEF will draft a new framework for its Diamond Grading Reports. Any suggestions from our customers are welcome.

In Vancouver, the Swiss CIBJO delegation (from right: M-A. Christen, C. Abouchar, B. Gallopin, J-P. Chalain) is accompanied by Mrs. Lauren Barwick, equestrian (Paralympic) finalist, 2005 Europeans Championship and Mrs. Kamini Jain, Sprint Kayak, 11-time World Cup medalist former office team.

LMHC News

The Laboratory Manual Harmonization Committee (LMHC) meets several times a year to harmonise the wording on gemstone reports. This committee is formed of representatives from AGTA-Gemological Testing Center (USA), CISGEM (Italy), GAAJ Laboratory (Japan), GIA-Gem Trade Laboratory (USA), GIT-Gem Testing Laboratory (Thailand), Gübelin Gem Lab (Switzerland) and SSEF Swiss Gemmological Institute (Switzerland).
In 2006, the LMHC met in April at Carlsbad, hosted by the GIA, and in December in Bangkok, organized by the GIT just before its Symposium. We would like to thank both institutes for their marvellous reception. A lot of agreements were reached in 2006. The related press releases may be consulted in the form of Information Sheets (InfoSheets) at the websites of the seven participating laboratories (AGTA, CISGEM, GAAJ, GIA, GIT, GGL and SSEF).

Close up: Corinne Grass

Miss Corinne Grass has taken over successfully from former administration team member Sonja Schwarz.
Miss Grass grew up in Basel where she finished her High School education. She is a multilingual pearl on the string of SSEF people.

SSEF Alumni Activities

2006 was also a very busy year for the SSEF Alumni Association. We were pleased to meet many of our members at various occasions, including presentations on the Blue Hope Diamond (M. Hügi) and a visit to a pearl farm in Bali, Indonesia (Prof. H.A. Hänni). In the autumn, we organised a fun-cruise night in Zurich and finally, in October, a weekend trip to London. This trip was packed with exciting events such as the visits to DTC DeBeers, The Tower of London with the Crown Jewels, and the Tiffany Exhibition. On our website **www.ssef-alumni.org** you will find more informations about the SSEF Alumni. The SSEF Alumni newsletters (downloadable from the website) are packed with interesting articles on Jade, Tanzanite, Opal from Sri Lanka, a Melo Pearl Imitation, and trips to Madagascar and Pailin in Cambodia.
SSEF would especially like to thank Mr Leon Ascot, President of SSEF Alumni, for his enthusiasm and hard work. Without his effort, SSEF Alumni would not be such a success. Thank you Leon!

SSEF Alumni Group at the Reception Cocktail at GIA London together with Edward Johnson (GIA London), Eric Emms (Precious Stone Lab, London).

New SSEF Diamond Spotter available now

For six years the SSEF has been successfully producing and selling spotters. The spotter, together with a short wave UV light source, enable the separation of type I and type II diamonds to be made. Colourless type II diamonds might have been HPHT treated. The spotter cannot identify the treatment, but indicates if this treatment should be expected (with type II) or not (type I). Type II diamonds identify themselves in the spotter by a green fluorescence reaction on the spotter's white disc. Type II diamonds transmit SWUV and this light fluoresces on the screen.

Over 3000 spotters have been sold all over the world. Many of them are used for cut diamond testing (type I or type II?). The majority of the spotters are, however used in the rough diamond business. They help to find those brown diamonds that have the potential to become colourless after a HPHT treatment (brown type II diamonds).

The spotter's weak point is that the fluorescence indicator on the white disc cannot be glued onto the disc itself. Despite our application rules "Do not touch the white disc" many spotters are sent for repair because of scratched discs. We have not changed the model for five years but are now about to come out with a slightly improved version.

The advantages are
1) the fluorescence disc is easier to replace.
2) the spotter has a loop for a string.
3) the shape is more pleasant and rounded.

For all those who have a spotter with damaged fluorescence disc we have extremely good news: SSEF is offering an exchange for only US$ 50 (plus shipping). As soon as we have received payment and the old spotter, we will ship a new spotter by FedEx or a similar service.
Please contact SSEF at gemlab@ssef.ch or by phone +41 61 262 06 40 or fax +41 61 262 06 41.

SSEF Around the Globe

2006 saw the SSEF gemmologists travelling all around the globe. The year started with the Tucson Show in January, where Dr. Krzemnicki gave a talk and presentation on LIBS, followed by a course for Tiffanys in New York. In the same month, Prof. Hänni (in cap and gown) was assisting the doctoral examination of Dr. Hanco Zwaan in Amsterdam. In Februray, Prof. Hänni was in Munich at the Inhorgenta Fair. In March he visited the pearl farms of Northern Bali. In April, Jean-Pierre Chalain was at the LMHC meeting, hosted by GIA in Carlsbad, USA. In May, Prof Hänni and Dr. Krzemnicki were invited to speak at the annual meeting of the Swiss Gemmological Association SGG. In July, Dr Krzemnicki participated at the Laser Ablation workshop at the Swiss Federal Technical Institute in Zurich. Mr Chalain was in Cambridge (UK) at the DeBeers Diamond Conference and later in Vancouver at the CIBJO Congress 2006. In August, Prof. Hänni was invited as supervisor to the Jade lab accreditation in Hong Kong. In September, the SSEF was again present at our booth at the HK Jewellery Show. Dr. Krzemnicki gave a lecture at the seminar of the Gemmological Association of Hong Kong on Paraiba tourmalines. After the show, he visited Tay Thye Sun from the Far East Gemological Institute in Singapore. At the same time, Mr Chalain was invited to speak at the Hiersun Summit, Beijing, China. In October Prof. Hänni was invited to speak on treated corundum at the seminar at the Gemmological Association of Taiwan in Taipei and on pearls in Vienna. Furthermore, Prof. Hänni gave lectures at the University of Lausanne (on analytical gemmology) and Berne (on gemstones). Dr. Krzemnicki gave a talk at the Gem-A Midlands Branch in Birmingham (UK) about Paraiba tourmalines. Mr Jean-Pierre Chalain attended a conference on CVD synthetic diamonds organised by the EMPA in Dübendorf, Switzerland. At the beginning of december, SSEF was in Bangkok. Jean-Pierre Chalain participated in the LMHC meeting, and Dr Krzemnicki gave a lecture on origin determination of gemstones at the first GIT Conference in Bangkok. After the Conference, he made a short visit to the sapphire mines in Pailin (Cambodia).

Prof Hänni congratulating Dr. Zwaan after his examination in Amsterdam.

Dr Krzemnicki receives a gift from K.K. Chow (GAHK) after his lecture in HongKong.

Mr Chalain, during his talk at the Hiersun Summit in Beijing, China.

Speakers and organisers of the annual gemmological seminar in Taipei.

SSEF at auction

The year 2006 was particular successful with regard to our presence in the international sales catalogues. Some of the most prestigious jewellery ever sold at auction was certified by SSEF. Among these was the Gulf-Pearl Parure from Harry Winston, a magnificent set with large

natural pearls and diamonds. The parure was sold at the Christie's jewellery sale in november 2006 for the world record price of $4.1 million. Apart from this unique piece, the gemmologists at SSEF had the pleasure of analysing a superb royal collection of natural pearls for the same auction.
In February 2006, an 8.62-carat Burmese ruby for which SSEF issued a Gemstone Certificate set a new world record at Christie's St. Moritz, selling for $425,000 per carat (see photo on title page of this newsletter). Laurence Graff, a London jeweller, who paid $3.6 million for this gemstone said he will call this cushion-cut Burmese ruby the Graff Ruby and may remount it in a new ring for a client.

First European Gemmological Symposium

In 2006, SSEF organised a meeting of representatives of the gemmological associations from Switzerland, Germany, France, and England to promote an annual European Gemmological Symposium for the future. We are therefore proud to announce that our suggestion has been received with enthusiasm and that the first symposium will be organised in 2007, when the German Gemmological Association (Deutsche Gemmologische Gesellschaft e.V.) celebrates its 75th anniversary.

Symposium:
"Presence and future of gemmology".
June 22 – 24, 2007
in Idar-Oberstein.

Over the last 75 years the German Gemmological Association has achieved an outstanding reputation in all the different fields of gemmology. Many first-hand descriptions of new gemstones, gemstone deposits, methods of treatment and new testing methods have been published in national and international journals, especially of course in the leading German gemmological journal "GEMMOLOGIE" which is edited by the German Gemmological Association itself.

During the two-days international gemmological symposium, which will take place as the First European Gemmological Symposium, important topics in gemmology and beyond that current developments in the whole jewellery and gemstone branch will be presented by renowned speakers from all over the world.

Further information available at:
GERMAN GEMMOLOGICAL ASSOCIATION
www.dgemg.com, info@dgemg.com

SSEF membership 2007

Dear Members (and those who would like to become members!)
Firstly we would like to say THANK YOU to all our loyal members!

IMPORTANT NOTE:
2007 we are slightly increasing the annual membership fee for the first time since the establishment of the SSEF. The new figure will be CHF 550.- including 7.6% VAT. We regret this step but since last year this donation has been liable to the VAT.
At the same time we would like to inform about the changement of our bank account.
Thank you for consideration.

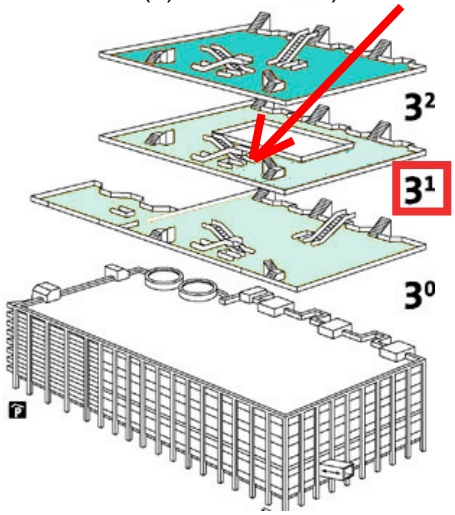
Visit us in 2007 for On-Site reports

On 2007 we will be available at the following trade fairs:

Inhorgenta München	23 - 25 Feb 07 (no reports)
Basel World 2007	12 - 19 April 07
Geneva Sales	12 - 15 May 07
Hong Kong Gem Fair	25 - 29 September 07
Geneva Sales	17 - 20 November 07

Basel World 2007: Benefit from our 24h Express Service

During the BaselWorld (12th to 19th April 2007) the SSEF is offering our much appreciated express service: **test reports within 24 hours**. We would like to invite you to our booth in Hall 3 (hall of elements) to say hello or for a cup of coffee. You will find our **booth** at **3.1/N07** on the first floor, (telephone at booth: +41 (0)61 699 51 29).



Donations 2006

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 for an important financial donation for the development of a new diamond instrument and for a complete Sortoscope.
- Hermann Wankmiller for a large number of cut gemstones
- Werner Spaltenstein for “Paraiba” tourmalines from Mozambique and further samples from Tanzania and Madagascar
- Chico Bank for “Paraiba” tourmalines from Mozambique
- Eva Zinsstag for a selection of the cut stones of late goldsmith Walter Zinsstag.
- Peter Groenenboom (AEL Laboratory) for cultured pearls and ivory samples.
- Andy Müller for a large lot of South Sea and Tahiti cultured pearls
- Urs Furrer (Golay), Gerhard Hahn, and Jörg Gellner for “chocolate” pearl samples.

Publications 2006

In 2006 we again published numerous articles in gemmological journals and trade magazines. For reprints, please contact SSEF (gemlab@ssef.ch)

The topics of the publications include:

- star quartz from Madagascar
- a melo pearl imitation
- Keshi cultured pearls
- historical asteriated, hydrogen-rich diamonds
- about type II diamonds showing a 648.0 nm photoluminescence peak
- origin determination of gemstones: Challenges and perspectives
- Introduction into gemstones A-Z (in French)
- diamond and its reglemantation (in French)

The SSEF Team wishes all friends and customers a successful New Year 2007 and would like to thank you kindly for your continued support of the SSEF laboratory.