

## Wednesday 10th November 2010

Heat Treatment of Ruby and Sapphire: a full day seminar by Ted Themelis

The subject of ruby and sapphire treatments has never been so much in the public eye with an ever increasing variety of treated gems making their way into the retail trade. This has led to significant litigation in the USA. It is crucial that jewellers and valuers are able to identify such stones as misidentification can lead to expensive damage, incorrect valuation and potential loss of reputation.

For those of you who cannot attend the Gem-A Conference in London we are offering a rare chance to update your knowledge of ruby and sapphire treatments and examine a large range of treated stones. We are very grateful to Ted Themelis for arranging to visit Scotland and offer a full day seminar and workshop, during his tour of the UK.

After graduating as B.Sc. in 1975 Ted Themelis established Gemlab Inc. in Bangkok to provide a broad range of services to the gem trade. Ted is one of the foremost pioneers and experts in the gem treatments field. The laboratory is equipped with state of the art furnaces and related gem treatment equipment and carries out experimental research into gem enhancement, specialising in treatments of ruby and sapphire. Ted has published several books and many articles on gem treatments. The second, updated, edition of his book, 'The Heat Treatment of Ruby and Sapphire', has just been published.

## Ted Themelis

In the Quality Hotel, Edinburg Airport

### QUALITY HOTEL EDINBURGH AIRPORT

Ingliston, Edinburgh, EH28 8AU  
Email: [info@qualityhoteledinburgh.com](mailto:info@qualityhoteledinburgh.com)

Tel: +44 (0) 131 333 4331  
Fax: +44 (0) 131 333 4124

From 10am to 5pm, including one hour for lunch.

Cost £75 for SGA members and £85 for non-members, including lunch.

## Programme

Between sessions there will be time to examine specimens of treated stones. Please bring a pen torch and loupe.

### **Session 1:** Diffusion and Heat Treatment of Ruby and Sapphire

Characterization of diffusion (old and new interpretations); type of diffusion in ruby and sapphire; gas diffusion, impurity diffusion; model of diffusion mechanism in ruby and sapphire; diffusion in untreated, natural ruby and sapphire; surface, subsurface colour and impurity diffusion in ruby and sapphire; comparison and conclusions of diffusion-treated rubies-sapphires.

### **Session 2:** Revisiting Beryllium-treated Ruby and Sapphire

Review of the first generation beryllium process; new developments of the second generation beryllium process — Be-treated blue, yellow, greenish sapphires; identification of the Be-treated ruby and sapphire using classic gemmological instruments; detection of beryllium in ruby and sapphire using LIBS, LA-ICP-MS and SIMS.

**Session 3:** Classification of the Heat Treatment Process of Ruby and Sapphire Additives — gas, solid and mixtures; heat treatment processes of ruby and sapphire classified into three major groups; methodology of the practical, commercial heat treatment processes; models of the heating processes of ruby and sapphire.

**Session 4:** 'Romancing the Geuda.' A documentary film on the heating of geuda sapphires, filmed by Ted Themelis in Sri Lanka in 1986.

**Session 5:** An update on the fracture-filling processes  
Nature and classification of the fractures in ruby and sapphire; methodology and applications of the borax-filling and lead-filling processes; combination fracture-filling processes (borax-silica-lead, etc.); desolvation process; comparison features between borax-filled and lead-filled rubies; fracture-filled rubies — features, characteristics, identification, stability.

**Session 6:** Value of the Heat-Treated Ruby and Sapphire  
Pricing structure — a journey from the mines to the consumer; model of mining production and value of ruby and sapphire; cost effectiveness index of the heat-treated ruby and sapphire; value of the heat-treated ruby and sapphire.

**Session 7:** Conclusions  
Considerations on the definition of a 'gem', 'treated gem'; examining the character of a 'gem'; treated vs. enhanced gem; concluding thoughts and recommendations for gemmologists.

**Session 8:** Surprise!  
Results on the ongoing experimentation in heat-treating new types of ruby and sapphire.