The Natural History of Quartz

Including:

"A Bull's Eye on Optical Activity"

Presentation by

Elise A. Skalwold

"It might be overstating a wee bit to say that if one could understand all there is to know about quartz, then everything else in the universe would make sense. Without doubt, this mineral has profoundly impacted many sciences and technologies which we rely upon today. At the very least, quartz provides one with a host of mental gymnastics and a seemingly endless variety of puzzles to ponder. Not least among its fascinating properties is that of optical activity, its manifestation of which results in the special optical figure affectionately known as the "bull's eye." So begins the author's booklet, **Quartz: a Bull's Eye on Optical Activity**, published by the Mineralogical Society of America.

In this presentation the author invites the audience to go on a tour through the vast world of quartz, both natural and synthetic, from its wide variety of colors and crystalline forms, to its optical properties and phenomena. Along with techniques to discern it's identification, we'll look through the microscopic to explore its inclusions in the so-called Micro-World. And, as the subtitle suggests, we shall explore the special properties such as optical activity and piezoelectricity which have made this mineral so desirable and important throughout history, including to science and technology.

Elise A. Skalwold is an Accredited Senior Gemologist, independent researcher, educator, author, and photographer. She has served as Consulting Gemological Curator at her alma mater Cornell University (B.Sc. 1982) and is Contributing Editor and author for the quarterly column *G&G Micro-World* featured in *Gems & Gemology*, the peer-reviewed scientific journal of the Gemological Institute of America (GIA). Ms. Skalwold is a Graduate Gemologist (G.G.) trained in residence at the Gemological Institute of America Robert Mouawad Campus located in Carlsbad, CA. While living in Thailand she worked in the famous gem markets of both Chanthaburi and Bangkok and pursued studies at the Gem & Jewelry Institute of Thailand for which she was subsequently elected a Fellow of the Gemmological Association of Great Britain (F.G.A.) in London.

As well as having co-authored the 415 page book The Edward Arthur Metzger Gem Collection and presently working on a companion volume to it, Ms. Skalwold is an author/co-author of gemology and mineralogy papers featured in *Rocks & Minerals Magazine, Gems & Gemology, The Journal of Gemmology, InColor,* and (most proudly) two optical mineralogy booklets published by the Mineralogical Society of America.

Passionate about her work, she takes great pride in representing gemology as a relevant geoscience around the world and with having done so at Cornell University; birthplace of the 125+ year-old Geological Society of America (GSA). A quintessential theme throughout her work was represented by the paper "Scholarly Treasure: The Role of Gems in a University Setting" presented at the 2013 GIA-sponsored first-ever Gemological Session of the GSA (for her review of the event, please see: "Gemology Bears Triumphant Tidings: a Review of the Historic 125th Anniversary Annual Meeting of the Geological Society of America" http://www.nordskip.com/GSA_Gemology_Session.pdf).

An internationally sought-after speaker, her engagements have recently included: 2018 Keynote Speaker at the Scottish Gemmological Association Conference in Dullatur, Scotland; the Scandinavian Gem Symposium in Kisa, Sweden; the Accredited Gemologists Association Conference in Tucson; several chapters of the Gemological Institute of America Alumni Association; Banquet Speaker, as well as, past speaker for the New York Mineralogical Club (co-founded by George F. Kunz in 1886); repeat speaker for the Rochester Mineralogical Symposium; and was the only female speaker for the prestigious 11th Annual Sinkankas Symposium [Ruby] held at the Gemological Institute of America in Carlsbad, CA.

Selected publications include:

Skalwold, E.A. and Bassett, W.A. (2017) **Ametrine optical dishes: windows into the effects of crystal structure**. *Gems & Gemology*, Vol. 53, No. 1, pages 102-103.

Bassett,W.A. and E.A.Skalwold (2017) **Diamond cleavage: importance to high pressure research**. *High Pressure Research*, Vol. 37, No.1, pages 1-13.

Skalwold, E.A. (2016) **Synthetic quartz: a designer inclusion specimen**. *Gems & Gemology,* Vol. 52, No. 4, pages 425-426.

Skalwold, E.A. and W.A. Bassett. (2016) **Blue minerals: exploring cause & effect**. *Rocks & Minerals*, Vol.91, No.1, pages 61-75

Skalwold, E.A. and W.A. Bassett. (2015) **Double Trouble: Navigating Birefringence**. Chantilly, VA: Mineralogical Society of America. 20 pages (booklet).

Skalwold, E.A. and W.A. Bassett. (2015) **Quartz: a Bull's Eye on Optical Activity**. Chantilly, VA: Mineralogical Society of America. 16 pages (booklet).

Koivula, J.I. and Skalwold, E.A. (2014) **The Microworld of diamonds: images from earth's mantle**. *Rocks & Minerals*, Vol. 89, No. 1, pages 46-53 (2014 Best Article of the Year).

Skalwold, E.A., Renfro N., Shigley J.E., and Breeding, C.M. (2012) **Characterization of a synthetic nano-polycrystalline diamond gemstone**. *Gems & Gemology*, Vol. 48, No. 3, pages 188-19.

Skalwold, E.A. (2012) **Nano-polycrystalline diamond sphere: a gemologist's perspective**. *Gems & Gemology*, Vol. 48, No. 2, pages 128-131.

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