For Further Reading

Gems & Gemology (G&G), GIA's professional journal, provides in-depth feature articles on the latest gemological research, from gem treatments, synthetics, and the evaluation of gem quality to developments in gem production, market sources, and more.

To give you the opportunity to learn more about the subjects you are studying and enrich your gemological knowledge, a list of *G&G* articles relevant to each *Gem Identification* assignment is provided below. It is important to note that this reading is optional. You will not be tested on the content of these articles.

All *G&G* articles are available for download free of charge on GIA's website, www.gia.edu. Copies of these articles are also available at your GIA campus location. Check with your instructor for access to them.

Scan the QR code above or go to https://www.gia.edu/library to access articles for further reading.

Assignment 1: Introduction

Gems & Gemology: https://www.gia.edu/gems-gemology

News and Articles: https://www.gia.edu/gia-news-research

GIA Gem Project

Dr. Edward Gübelin's comprehensive collection was acquired by GIA in 2005. The Gübelin collection consists of approximately 2,800 gems representing 225 different minerals. It now forms part of the GIA Gem Collection, where it is being used for research, education, and display. Since 2007, GIA has undertaken a project to characterize gemstones from the Gübelin collection. This project has two main goals: to systematically document the stones using a range of techniques, and to make the results available on the GIA website as a valuable resource for students, gemologists, researchers, and anyone interested in gem materials. Each entry includes geographic locality information, a summary of standard gemological properties, a brief description of the internal or external features that can be seen with standard magnification, and infrared, visible, Raman, and photoluminescence spectra where relevant.

Please see the index page at https://www.gia.edu/gia-gem-database

Major Entries

Beryl: https://www.gia.edu/gia-gem-project-beryl

Corundum: https://www.gia.edu/gia-gem-corundum

Garnet: https://www.gia.edu/gia-gem-project-garnet

Spinel: https://www.gia.edu/gia-gem-project-spinel

Tourmaline: https://www.gia.edu/gia-gem-project-tourmaline

Zircon: https://www.gia.edu/gia-gem-project-zircon

Various gems

Amblygonite–Axinite: https://www.gia.edu/gia-gem-project-various-gems-a

Barite–Cuprite: https://www.gia.edu/gia-gem-project-various-gems-b-c

Danburite–Humite: https://www.gia.edu/gia-gem-project-various-gems-d-h

Kornerupine–Natrolite: https://www.gia.edu/gia-gem-project-various-gems-k-n

Olivine (peridot)–Rutile: https://www.gia.edu/gia-gem-project-various-gems-o-r

Sapphirine–Stibiotantalite: https://www.gia.edu/gia-gem-project-various-gems-s

Taaffeite–Zoisite: https://www.gia.edu/gia-gem-project-various-gems-t-z

Assignment 2: General Observation

Doubling

Hurlbut C.S., Francis C.A. (1984) An Extraordinary Calcite Gemstone. *Gems & Gemology*, Vol. 20, No. 4
https://www.gia.edu/gems-gemology/winter-1984-calcite-hurlbut

Phenomena

Bohannon S. (2016) Optical Effects of Phenomenal Cabochons. GIA Research & News
https://www.gia.edu/gia-news-research/optical-effects-phenomenal-cabochons

Schmetzer K. et al. (2015) Dual-Color Double Stars in Ruby, Sapphire, and Quartz: Cause and Historical Account. *Gems & Gemology*, Vol. 51, No. 2
https://www.gia.edu/gems-gemology/summer-2015-dual-color-double-stars-ruby-sapphire-quartz

Hainschwang T., Notari F. (2006) The Cause of Iridescence in Rainbow Andradite from Nara, Japan. *Gems & Gemology*, Vol. 42, No. 4
https://www.gia.edu/gems-gemology/winter-2006-iridescence-rainbow-andradite-japan-hainschwang

Gübelin E., Schmetzer K. (1982) Gemstones with Alexandrite Effect. *Gems & Gemology*, Vol. 18, No. 4
https://www.gia.edu/gems-gemology/winter-1982-alexandrite-effect-gubelin

Assembled Stones

Anjomani N. (2016) Lab Notes: Synthetic Sapphire and Synthetic Spinel Doublets. *Gems & Gemology*, Vol. 52, No. 4
https://www.gia.edu/gems-gemology/winter-2016-labnotes-synthetic-sapphire-synthetic-spinel-doublets

Cooper A. et al. (2013) Lab Notes: Imitation Rainbow Moonstone Assemblage. *Gems & Gemology*, Vol. 49, No. 3
https://www.gia.edu/gems-gemology/FA13-LN-imitation-moonstone-assemblage

Lucas A. (2012) Gem News International: Bicolored Tourmaline Imitation. *Gems & Gemology*, Vol. 48, No. 1
https://www.gia.edu/gems-gemology/spring-2012-gem-news-international

Befi R. (2011) Gem News International: Trapiche Emerald Imitation. *Gems & Gemology*, Vol. 47, No. 1
https://www.gia.edu/gems-gemology/spring-2011-gem-news-international

Singbamroong S. et al. (2007) Gem News International: Large Beryl Triplets Imitating Colombian Emeralds. *Gems & Gemology*, Vol. 43, No. 3
https://www.gia.edu/gems-gemology/fall-2007-gem-news-international

McClure S.F., Koivula J.I. (2001) A New Method for Imitating Asterism. *Gems & Gemology*, Vol. 37, No. 2
https://www.gia.edu/gems-gemology/summer-2001-imitating-asterism-mcclure

Mayerson W.M. (2001) Lab Notes: Unusual Beryl-and-Glass Triplet Imitating Emerald. *Gems & Gemology*, Vol. 37, No. 1
https://www.gia.edu/gems-gemology/spring-2001-lab-notes

Kammerling R.C., McClure S.F. (1995) Lab Notes: Jadeite Jade Assemblages. *Gems & Gemology*, Vol. 31, No. 3
https://www.gia.edu/gems-gemology/fall-1995-lab-notes

Assignment 3: Refraction and the Refractometer

Hurlbut, C. S. (1981) A Cubic Zirconia Refractometer. *Gems & Gemology*, Vol. 17, No. 2
https://www.gia.edu/gems-gemology/summer-1981-cz-refractometer-hurlbut

Assignment 4: Polariscope Testing

Crowningshield R. et al. (1986) A Simple Procedure to Separate Natural from Synthetic Amethyst on the Basis of Twinning. *Gems & Gemology*, Vol. 22, No. 3
https://www.gia.edu/gems-gemology/fall-1986-amethyst-twinning-crowningshield

Assignment 5: Pleochroism and the Dichroscope

Hughes R.W. (2014) Pleochroism in Faceted Gems: An Introduction. *Gems & Gemology*, Vol. 50, No. 3
https://www.gia.edu/gems-gemology/fall-2014-introduction-pleochroism-faceted-gems

Assignment 6: Magnification

Smith E.M., Moe K.S. (2016) Micro-World: Ferropericlase Inclusion in Diamond. *Gems & Gemology*, Vol. 52, No. 4
https://www.gia.edu/gems-gemology/winter-2016-microworld-ferropericlase-inclusion-diamond

Raynaud V., Vertriest W. (2016) Micro-World: Etch Marks, Negative Crystals, and Etch Tubes in Spinel from Madagascar. *Gems & Gemology*, Vol. 52, No. 3
https://www.gia.edu/gems-gemology/fall-2016-microworld-etch-marks-negative-crystals-tubes-spinel-madagascar

Koivula J.I. (2016) Micro-World: Tourmaline Termination. *Gems & Gemology*, Vol. 52, No. 3
https://www.gia.edu/gems-gemology/fall-2016-microworld-tourmaline-termination

Sun Z., Muyal J. (2016) Gem News International: Large Aqueous Primary Fluid Inclusion in Amethyst. *Gems & Gemology*, Vol. 52, No. 3
https://www.gia.edu/gems-gemology/fall-2016-gemnews-large-aqueous-primary-fluid-inclusion-amethyst

Renfro N. (2016) Micro-World: Mobile Fluorite in Quartz. *Gems & Gemology*, Vol. 52, No. 3
https://www.gia.edu/gems-gemology/fall-2016-microworld-mobile-fluorite-quartz

Renfro N., Sun Z. (2016) Micro-World: Unusual Growth Zoning in Beryl. *Gems & Gemology*, Vol. 52, No. 3
https://www.gia.edu/gems-gemology/fall-2016-microworld-unusual-growth-zoning-beryl

Renfro N. et al. (2016) Micro-World: A Fantastic Display of Phase Changes in a Sapphire's Fluid Inclusion. *Gems & Gemology*, Vol. 52, No. 1
https://www.gia.edu/gems-gemology/spring-2016-microworld-fantastic-display-phase-changes-sapphires-fluid-inclusion

Skalwold E.A. et al. (2015) Introduction to the Micro-World of Gems. *Gems & Gemology*, Vol. 51, No. 2
https://www.gia.edu/gems-gemology/summer-2015-microworld-introduction-gems

Renfro N. et al. (2015) A Closer Look at the Micro-World of Gems. *Gems & Gemology*, Vol. 51, No. 2
https://www.gia.edu/gems-gemology/micro-world-gallery

Renfro N. et al. (2013) Lab Notes: Unusual Curved Color Zoning in Emerald. *Gems & Gemology*, Vol. 49, No. 2
https://www.gia.edu/gems-gemology/summer-2013-labnotes-unusual-curved-color-zoning-in-emerald

The Hidden Beauty of Gemstones (2013) GIA Research & News
https://www.gia.edu/photomicrography

Koivula J.I. et al. (2009) Solution-Generated Pink Color Surrounding Growth Tubes and Cracks in Blue to Blue-Green Copper-Bearing Tourmalines from Mozambique. *Gems & Gemology*, Vol. 45, No. 1
https://www.gia.edu/gems-gemology/spring-2009-tourmalines-mozambique-koivula

Koivula J.I. (2003) Photomicrography for Gemologists. *Gems & Gemology*, Vol. 39, No. 1
https://www.gia.edu/gems-gemology/spring-2003-photomicrography-gemologists-koivula

Meyer H.O.A., Gübelin E. (1981) Ruby in Diamond. *Gems & Gemology*, Vol. 17, No. 3
https://www.gia.edu/gems-gemology/fall-1981-diamond-ruby-inclusion-meyer

For Further Reading

Gems & Gemology (G&G), GIA's professional journal, provides in-depth feature articles on the latest gemological research, from gem treatments, synthetics, and the evaluation of gem quality to developments in gem production, market sources, and more.

To give you the opportunity to learn more about the subjects you are studying and enrich your gemological knowledge, a list of *G&G* articles relevant to each *Gem Identification* assignment is provided below. It is important to note that this reading is optional. You will not be tested on the content of these articles.

All *G&G* articles are available for download free of charge on GIA's website, www.gia.edu. Copies of these articles are also available at your GIA campus location. Check with your instructor for access to them.

Scan the QR code above or go to https://www.gia.edu/library to access articles for further reading.

Assignment 7: Selective Absorption and the Spectroscope

Scarratt K. (1982) The Identification of Artificial Coloration in Diamond. *Gems & Gemology*, Vol. 18, No. 2
https://www.gia.edu/gems-gemology/summer-1982-diamonds-coloration-scarratt

Crowningshield G.R. (1957) Spectroscopic Recognition of Yellow Bombarded Diamonds. *Gems & Gemology*, Vol. 9, No. 4
https://www.gia.edu/doc/winter_1957.pdf

Crowningshield G.R. (1957) An Introduction to Spectroscopy in Gem Testing. *Gems & Gemology*, Vol. 9, No. 2
https://www.gia.edu/summer-1957-a4-spectroscopy-gem-testing-crowningshield

Assignment 8: Fluorescence and Phosphorescence

King J., Wang W. (2017) Lab Notes: Diamond with Unusual Fluorescence Distribution. *Gems & Gemology*, Vol. 53, No. 2
https://www.gia.edu/gems-gemology/summer-2017-labnotes-diamond-unusual-fluorescence-distribution

Hand D. (2015) Lab Notes: Dyed and Natural Green Jadeite. *Gems & Gemology*, Vol. 51, No. 3
https://www.gia.edu/gems-gemology/fall-2015-labnotes-dyed-natural-green-jadeite

Luo Y., Breeding C.M. (2013) Fluorescence Produced by Optical Defects in Diamond. *Gems & Gemology*, Vol. 49, No. 2
https://www.gia.edu/gems-gemology/summer-2013-luo-fluorescence-optical-defects

Moses T.M. et al. (1997) A Contribution to Understanding the Effect of Blue Fluorescence on the Appearance of Diamonds. *Gems & Gemology*, Vol. 33, No. 4
https://www.gia.edu/gems-gemology/winter-1997-fluorescence-diamonds-moses

Assignment 9: Additional Tests

Feral K. (2012) Detecting HPHT Synthetic Diamond Using a Handheld Magnet. *Gems & Gemology*, Vol. 48, No. 4
https://www.gia.edu/gems-gemology/winter-2012-hpht-diamond-feral

Hoover D.B. (1983) The GEM DiamondMaster and the Thermal Properties of Gems. *Gems & Gemology*, Vol. 19, No. 2
https://www.gia.edu/gems-gemology/summer-1983-diamond-thermal-hoover

Assignment 10: Separation and Identification

Schwarz D. (1994) Emeralds from the Mananjary Region, Madagascar: Internal Features. *Gems & Gemology*, Vol. 30, No. 2
https://www.gia.edu/gems-gemology/summer-1994-emeralds-madagascar-schwarz

Muhlmeister S. et al. (1993) Flux-Grown Synthetic Red and Blue Spinels from Russia. *Gems & Gemology*, Vol. 29, No. 2
https://www.gia.edu/gems-gemology/summer-1993-synthetic-spinel-russia-muhlmeister

Hobbs J.M. (1982) The Jade Enigma. *Gems & Gemology*, Vol. 18, No. 1
https://www.gia.edu/gems-gemology/spring-1982-jade-enigma-hobbs

Hobbs J.M. (1981) A Simple Approach to Detecting Diamond Simulants. *Gems & Gemology*, Vol. 17, No. 1
https://www.gia.edu/gems-gemology/spring-1981-diamond-simulants-hobbs

Assignment 11: Separating Natural Gems from Synthetics and Imitations

Synthetic Diamonds (General)

Eaton-Magaña S., Breeding C.M. (2016) An Introduction to Photoluminescence Spectroscopy for Diamond and Its Applications in Gemology. *Gems & Gemology*, Vol. 52, No. 1
https://www.gia.edu/gems-gemology/spring-2016-photoluminescence-spectroscopy-diamond-applications-gemology

Dieck C. et al. (2016) Lab Notes: Analysis of Yellow Diamond Melee for Color Treatment and Synthetics. *Gems & Gemology*, Vol. 52, No. 1
https://www.gia.edu/gems-gemology/spring-2016-labnotes-analysis-yellow-diamond-melee-color-treatment-synthetics

Shigley J.E. (2016) Identifying Lab-Grown Diamonds. *Research News*
https://www.gia.edu/identifying-lab-grown-diamonds

Wang W. et al. (2015) Lab Notes: Screening of Small Yellow Diamond Melee for Treatment and Synthetics. *Gems & Gemology*, Vol. 50, No. 4
https://www.gia.edu/gems-gemology/winter-2014-labnotes-small-yellow-diamond-melee

Renfro N. et al. (2010) Synthetic Gem Materials in the 2000s: A Decade in Review. *Gems & Gemology*, Vol. 46, No. 4
https://www.gia.edu/gems-gemology/winter-2010-synthetic-diamonds-renfro

Kitawaki H. et al. (2008) Identification of Melee-Size Synthetic Yellow Diamonds in Jewelry. *Gems & Gemology*, Volume 44, No. 3
https://www.gia.edu/gems-gemology/fall-2008-melee-size-synthetic-yellow-diamonds-kitawaki

Shigley J.E. et al. (2004) An Updated Chart on the Characteristics of HPHT-Grown Synthetic Diamonds. *Gems & Gemology*, Vol. 40, No. 4
https://www.gia.edu/gems-gemology/winter-2004-characteristics-hpht-grown-synthetic-diamonds-shigley

Koivula J.I. et al. (2000) Synthetic Gem Materials and Simulants in the 1990s. *Gems & Gemology*, Vol. 36, No. 4
https://www.gia.edu/gems-gemology/winter-2000-synthetic-gem-materials-simulants-1990s-koivula

Welbourn C.M. et al. (1996) De Beers Natural versus Synthetic Diamond Verification Instruments. *Gems & Gemology*, Vol. 32, No. 3
https://www.gia.edu/gems-gemology/fall-1996-debeers-diamond-tools-welbourn

Fritsch E. et al. (1989) A Preliminary Gemological Study of Synthetic Diamond Thin Films. *Gems & Gemology*, Vol. 25, No. 2
https://www.gia.edu/gems-gemology/summer-1989-diamond-thin-films-fritsch

CVD Synthetic Diamonds

Moe K.S. et al. (2017) Lab Notes: A Synthetic Diamond Overgrowth on a Natural Diamond. *Research News*
https://www.gia.edu/gems-gemology/summer-2017-labnotes-synthetic-diamond-overgrowth-natural-diamond

Eaton-Magaña S., Shigley J.E. (2016) Observations on CVD-Grown Synthetic Diamonds: A Review. *Gems & Gemology*, Vol. 52, No. 3
https://www.gia.edu/gems-gemology/fall-2016-observations-CVD-grown-synthetic-diamonds-review

Poon T. et al. (2016) Lab Notes: Ring with a CVD Synthetic Melee Diamond. *Gems & Gemology*, Vol. 52, No. 1
https://www.gia.edu/gems-gemology/spring-2016-labnotes-ring-cvd-synthetic-melee-diamond

Ardon T., Eaton-Magaña S. (2014) Lab Notes: Two Fancy Dark Gray CVD Synthetic Diamonds. *Gems & Gemology*, Vol. 50, No. 3
https://www.gia.edu/gems-gemology/fall-2014-labnotes-two-fancy-fark-gray-cvd-synthetic-diamonds

Ardon T. (2014) Lab Notes: CVD Synthetic Diamond with Unusual Inclusions. *Gems & Gemology*, Vol. 50, No. 3
https://www.gia.edu/gems-gemology/fall-2014-labnotes-cvd-synthetic-diamond-with-unusual-inclusions

Moe K.S. et al. (2014) Lab Notes: Yellow CVD Synthetic Diamond. *Gems & Gemology*, Vol. 50, No. 2
https://www.gia.edu/gems-gemology/summer-2014-labnotes-yellow-cvd-synthetic-diamond

Eaton-Magaña S. (2014) Lab Notes: CVD Synthetic Diamond with Unusual DiamondView Image. *Gems & Gemology*, Vol. 50, No. 1
https://www.gia.edu/gems-gemology/spring-2014-labnotes-cvd-diamond-unusual

Lo C. et al. (2014) Lab Notes: Round CVD Synthetic Diamond Over 1 Ct Identified in Hong Kong Lab. *Gems & Gemology*, Vol. 50, No. 1
https://www.gia.edu/gems-gemology/spring-2014-labnotes-large-cvd-synthetic-diamond

Ardon T., Eaton-Magaña S. (2013) Lab Notes: Large Pinkish Brown CVD Synthetic Diamond. *Gems & Gemology*, Vol. 49, No. 3
https://www.gia.edu/gems-gemology/FA13-LN-pinkish-brown-CVD-synthetic

Kitawaki H. (2013) Gem News International: Undisclosed Samples of Large CVD Synthetic Diamond. *Gems & Gemology*, Vol. 49, No. 1
https://www.gia.edu/gems-gemology/spring-2013-gemnews-undisclosed-samples-large-cvd-diamond

D'Haenens-Johansson U. et al. (2013) Lab Notes: Three CVD Synthetic Diamonds Submitted to Mumbai Laboratory. *Gems & Gemology*, Vol. 49, No. 1
https://www.gia.edu/gems-gemology/spring-2013-labnotes-three-cvd-synthetic-diamonds

Ardon T. et al. (2013) Lab Notes: CVD-Grown Synthetic Diamond with Aggregated Nitrogen Impurities. *Gems & Gemology*, Vol. 49, No. 1
https://www.gia.edu/gems-gemology/spring-2013-labnotes-grown-synthetic-diamond-aggregated-nitrogen-impurities

Linares R. (2013) CVD-Grown Synthetic Diamonds, Part 1: History. *Research News*
https://www.gia.edu/news-research-CVD-grown-part1

Linares R. (2013) CVD-Grown Synthetic Diamonds, Part 2: Properties. *Research News*
https://www.gia.edu/gia-news-research-CVD-grown-part2

Wang W. et al. (2012) CVD Synthetic Diamonds from Gemesis Corp. *Gems & Gemology*, Vol. 48, No. 2
https://www.gia.edu/gems-gemology/summer-2012-cvd-synthetic-diamonds-gemesis-corp-wang

Eaton-Magaña S., D'Haenens-Johansson U.F.S. (2012) Recent Advances in CVD Synthetic Diamond Quality. *Gems & Gemology*, Vol. 48, No. 2
https://www.gia.edu/gems-gemology/summer-2012-recent-advances-cvd-quality-eaton-magana

Willems B. et al. (2011) Exploring the Origin and Nature of Luminescent Regions in CVD Synthetic Diamond. *Gems & Gemology*, Vol. 47, No. 3
https://www.gia.edu/gems-gemology/fall-2011-cvd-synthetic-diamond-willems

Khan R.U.A. et al. (2010) Color Alterations in CVD Synthetic Diamond with Heat and UV Exposure: Implications for Color Grading and Identification. *Gems & Gemology*, Vol. 46, No. 1
https://www.gia.edu/gems-gemology/spring-2010-synthetic-diamond-khan

Wang W. et al. (2010) Strongly Colored Pink CVD Lab-Grown Diamonds. *Gems & Gemology*, Vol. 46, No. 1
https://www.gia.edu/gems-gemology/spring-2010-pink-cvd-diamonds-wang

Wang W. (2009) CVD-Grown Pink Diamonds. *Research News*
https://www.gia.edu/ongoing-research/cvd-grown-pink-diamonds

Wang W. et al. (2007) Latest-Generation CVD-Grown Synthetic Diamonds from Apollo Diamond Inc. *Gems & Gemology*, Vol. 43, No. 4
https://www.gia.edu/gems-gemology/winter-2007-cvd-grown-synthetic-diamonds-wang

Wang W. et al. (2005) Experimental CVD Synthetic Diamonds from LIMHP-CNRS, France. *Gems & Gemology*, Vol. 41, No. 3
https://www.gia.edu/gems-gemology/fall-2005-cvd-synthetic-diamond-france-wang

Martineau P.M. et al (2004) Identification of Synthetic Diamond Grown Using Chemical Vapor Deposition (CVD). *Gems & Gemology*, Vol. 40, No. 1
https://www.gia.edu/gems-gemology/spring-2004-identification-cvd-synthetic-diamond-martineau

Wang W. et al. (2003) Gem-Quality Synthetic Diamonds Grown by a Chemical Vapor Deposition (CVD) Method. *Gems & Gemology*, Vol. 39, No 4
https://www.gia.edu/gems-gemology/winter-2003-synthetic-diamonds-chemical-vapor-deposition-wang

Nassau K. (1990) Synthetic Gem Materials in the 1980s. *Gems & Gemology*, Vol. 26, No. 1
https://www.gia.edu/gems-gemology/spring-1990-synthetic-gem-materials-nassau

HPHT Synthetic Diamonds

Johnson P., Myagkaya E. (2017) Lab Notes: HPHT Synthetic Diamond with Intense Green Color. *Gems & Gemology*, Vol. 53, No. 1
https://www.gia.edu/gems-gemology/spring-2017-labnotes-synthetic-diamond-intense-green-color

Poon T., Wang W. (2016) Lab Notes: Blue HPHT Synthetic Diamond Over 10 Carats. *Gems & Gemology*, Vol. 52, No. 4
https://www.gia.edu/gems-gemology/winter-2016-labnotes-blue-HPHT-synthetic-diamond-over-10-carats

Kennedy L., Johnson P. (2016) Lab Notes: Yellow Synthetic Diamond with Nickel-Related Green Fluorescence. *Gems & Gemology*, Vol. 52, No. 2
https://www.gia.edu/gems-gemology/summer-2016-labnotes-yellow-synthetic-diamond-nickel-related-green-fluorescence

Moe K.S. et al. (2016) Lab Notes: Largest Blue HPHT Synthetic Diamond. *Gems & Gemology*, Vol. 52, No. 1
https://www.gia.edu/gems-gemology/spring-2016-labnotes-largest-blue-hpht-synthetic-diamond

Wang W., Moses T. (2016) Gem News International: Large Colorless HPHT Synthetic Gem Diamonds from China. *Gems & Gemology*, Vol. 52, No. 1
https://www.gia.edu/gems-gemology/spring-2016-gemnews-large-colorless-hpht-synthetic-gem-diamonds-china

D'Haenens-Johansson U.F.S. et al. (2015) Large Colorless HPHT Synthetic Diamonds from New Diamond Technology. *Gems & Gemology*, Vol. 51, No. 3
https://www.gia.edu/gems-gemology/fall-2015-large-colorless-hpht-grown-synthetic-gem-diamond-technology-russia

Poon P.Y. et al. (2015) Large HPHT-Grown Synthetic Diamonds Examined in GIA's Hong Kong Laboratory. GIA Research & News
https://www.gia.edu/gia-news-research-large-hpht-grown-synthetic-diamonds-examined-in-gia-hong-kong-laboratory

Soonthorntantikul W., Siritheerakul P. (2015) Lab Notes: Near-Colorless Melee-Sized HPHT Synthetic Diamonds Identified in GIA Laboratory. *Gems & Gemology*, Vol. 51, No. 2
https://www.gia.edu/gems-gemology/summer-2015-labnotes-near-colorless-melee-HPHT-synthetic-diamond

D'Haenens-Johansson U.F.S. et al. (2014) Near-Colorless HPHT Synthetic Diamonds from AOTC Group. *Gems & Gemology*, Vol. 50, No. 1
https://www.gia.edu/gems-gemology/spring-2014-ulrika-hpht-synthetic-diamonds

Feral K. (2012) Detecting HPHT Synthetic Diamond Using a Handheld Magnet. *Gems & Gemology*, Vol. 48, No. 4
https://www.gia.edu/gems-gemology/winter-2012-hpht-diamond-feral

Dobrinets I.A., Zaitsev A.M. (2009) "Fluorescence Cage": Visual Identification of HPHT-Treated Type I Diamonds. *Gems & Gemology*, Volume 45, No. 3
https://www.gia.edu/gems-gemology/fall-2009-diamonds-hpht-treated-dobrinets

Shigley J.E. et al. (2004) An Updated Chart on the Characteristics of HPHT-Grown Synthetic Diamonds. *Gems & Gemology*, Vol. 40, No. 4
https://www.gia.edu/gems-gemology/winter-2004-characteristics-hpht-grown-synthetic-diamonds-shigley

Shigley J.E. et al. (2004) Lab-Grown Colored Diamonds from Chatham Created Gems. *Gems & Gemology*, Vol. 40, No. 2
https://www.gia.edu/gems-gemology/summer-2004-chatham-lab-grown-colored-diamonds-shigley

Shigley J.E. et al. (2002) Gemesis Laboratory-Created Diamonds. *Gems & Gemology*, Vol. 38, No. 4
https://www.gia.edu/gems-gemology/winter-2002-gemesis-laboratory-created-diamonds-shigley

Shigley J.E. et al. (1997) Gemological Properties of Near-Colorless Synthetic Diamonds. *Gems & Gemology*, Vol. 33, No. 1
https://www.gia.edu/gems-gemology/spring-1997-synthetic-diamond-properties-shigley

Shigley J.E. et al. (1995) A Chart for the Separation of Natural and Synthetic Diamonds. *Gems & Gemology*, Vol. 31, No. 4
https://www.gia.edu/gems-gemology/winter-1995-synthetic-diamond-chart-shigley

Shigley J.E. et al. (1993) The Gemological Properties of Russian Gem-Quality Synthetic Yellow Diamonds. *Gems & Gemology*, Vol. 29, No. 4
https://www.gia.edu/gems-gemology/winter-1993-russia-synthetic-diamond-shigley

Shigley J.E. et al. (1993) Two Near-Colorless General Electric Type-IIA Synthetic Diamond Crystals. *Gems & Gemology*, Vol. 29, No. 3
https://www.gia.edu/gems-gemology/fall-1993-synthetic-diamond-shigley

Rooney M.T. et al. (1993) De Beers Near Colorless-to-Blue Experimental Gem-Quality Synthetic Diamonds. *Gems & Gemology*, Vol. 29, No. 1
https://www.gia.edu/gems-gemology/spring-1993-debeers-synthetic-diamond-rooney

Shigley J.E. et al. (1992) An Update on Sumitomo Gem-Quality Synthetic Diamonds. *Gems & Gemology*, Vol. 28, No. 2
https://www.gia.edu/gems-gemology/summer-1992-sumitomo-synthetic-diamond-shigley

Shigley J.E. et al. (1987) The Gemological Properties of the De Beers Gem-Quality Synthetic Diamonds. *Gems & Gemology*, Vol. 23, No. 4
https://www.gia.edu/gems-gemology/winter-1987-debeers-synthetic-diamond-shigley

Shigley J.E. et al. (1986) The Gemological Properties of the Sumitomo Gem-Quality Synthetic Yellow Diamonds. *Gems & Gemology*, Vol. 22, No. 4
https://www.gia.edu/gems-gemology/winter-1986-synthetic-diamond-shigley

Koivula J.I., Fryer C.W. (1984) Identifying Gem-Quality Synthetic Diamonds: An Update. *Gems & Gemology*, Vol. 20, No. 3
https://www.gia.edu/gems-gemology/fall-1984-synthetic-diamond-koivula

Rossman G., Kirschvink J.L. (1984) Magnetic Properties of Gem-Quality Synthetic Diamonds. *Gems & Gemology*, Vol. 20, No. 3
https://www.gia.edu/gems-gemology/fall-1984-synthetic-diamonds-rossman

Synthetic Corundum

Saeseaw S. et al. (2015) Analysis of Synthetic Ruby Overgrowth on Corundum. GIA Research & News
https://www.gia.edu/gia-news-research/synthetic-ruby-overgrowth-corundum-analysis

Stone-Sundberg J. (2013) Sapphire Series Part 1: Introduction to Sapphire and Synthetic Sapphire. GIA Research & News
https://www.gia.edu/gia-news-research-Sapphire-Series-Introduction-to-Sapphire-and-Synthetic-Sapphire

Stone-Sundberg J. (2013) Sapphire Series Part 4: Gem Synthetic Sapphire and Diffusion-Treated Synthetics. GIA Research & News
https://www.gia.edu/gia-news-research-Sapphire-Series-Treated-Synthetics

Thomas V.G. et al. (1997) Tairus Hydrothermal Synthetic Sapphires Doped with Nickel and Chromium. *Gems & Gemology*, Vol. 33, No. 3
https://www.gia.edu/gems-gemology/fall-1997-hydrotherma-synthetic-sapphires-thomas

Hänni H. et al. (1994) Synthetic Rubies by Douros: A New Challenge for Gemologists. *Gems & Gemology*, Vol. 30, No. 2
https://www.gia.edu/gems-gemology/summer-1994-douros-synthetic-ruby

Koivula J.I., Kammerling R.C. (1988) A Gemological Look at Kyocera's New Synthetic Star Ruby. *Gems & Gemology*, Vol. 24, No. 4
https://www.gia.edu/gems-gemology/winter-1988-ruby-inamori-koivula

Kane R.E. (1985) A Preliminary Report on the New Lechleitner Synthetic Ruby and Synthetic Blue Sapphire. *Gems & Gemology*, Vol. 21, No. 1
https://www.gia.edu/gems-gemology/spring-1985-synthesis-ruby-sapphire-kane

Kane R.E. (1983) The Ramaura Synthetic Ruby. *Gems & Gemology*, Vol. 19, No. 3
https://www.gia.edu/gems-gemology/fall-1983-synthetic-ruby-kane

Kane R.E. (1982) The Gemological Properties of Chatham Flux-Grown Synthetic Orange Sapphire and Synthetic Blue Sapphire. *Gems & Gemology*, Vol. 18, No. 3
https://www.gia.edu/gems-gemology/fall-1982-synthetic-sapphire-kane

Gübelin E.J. (1982) New Synthetic Rubies Made by Professor P. O. Knischka. *Gems & Gemology*, Vol. 18, No. 3
https://www.gia.edu/gems-gemology/fall-1982-synthetic-ruby-gubelin

Synthetic Beryl

Schmetzer K. et al. (2016) Synthetic Emeralds Grown by Richard Nacken in the Mid-1920s. *Gems & Gemology*, Vol. 52, No. 4
https://www.gia.edu/gems-gemology/winter-2016-synthetic-emeralds-richard-nacken-1920s

Choudhary G., Golecha C. (2007) Gem News International: New Tairus Synthetic Beryl Simulating "Paraíba" Tourmaline. *Gems & Gemology*, Vol. 43, No. 4
https://www.gia.edu/gems-gemology/winter-2007-gem-news-international

Koivula J.I. et al. (1996) Gemological Investigation of a New Type of Russian Hydrothermal Synthetic Emerald. *Gems & Gemology*, Vol. 32, No. 1
https://www.gia.edu/gems-gemology/spring-1996-hydrothermal-synthetic-emerald-koivula

Graziani G. et al. (1987) The Lennix Synthetic Emerald. *Gems & Gemology*, Vol. 23, No. 3
https://www.gia.edu/gems-gemology/fall-1987-lennix-synthetic-emerald-graziani

Kane R.E., Liddicoat R.T. (1985) The Biron Hydrothermal Synthetic Emerald. *Gems & Gemology*, Vol. 21, No. 3
https://www.gia.edu/gems-gemology/fall-1985-synthetic-emerald-australia-kane

Koivula J.I., Keller P.C. (1985) Russian Flux-Grown Synthetic Emeralds. *Gems & Gemology*, Vol. 21, No. 2
https://www.gia.edu/gems-gemology/summer-1985-russia-synthetic-emerald-koivula

Stockton C.M. (1984) The Chemical Distinction of Natural from Synthetic Emeralds. *Gems & Gemology*, Vol. 20, No. 3
https://www.gia.edu/gems-gemology/fall-1984-synthetics-emerald-stockton

Synthetic Quartz

Balitsky V.S. et al. (1999) Russian Synthetic Ametrine. *Gems & Gemology*, Vol. 35, No. 2
https://www.gia.edu/gems-gemology/summer-1999-russian-synthetic-ametrine-balitsky

Balitsky V.S. et al. (1998) Russian Synthetic Pink Quartz. *Gems & Gemology*, Vol. 34, No. 1
https://www.gia.edu/gems-gemology/spring-1998-russian-synthetic-pink-quartz-balitsky

Crowningshield R. et al. (1986) A Simple Procedure to Separate Natural from Synthetic Amethyst on the Basis of Twinning. *Gems & Gemology*, Vol. 22, No. 3
https://www.gia.edu/gems-gemology/fall-1986-amethyst-twinning-crowningshield

Synthetic Opal

Laurs B.M., McClure S.F. (2012) Gem News International: "Sterling Opal" Debuts. *Gems & Gemology*, Vol. 48, No. 1
https://www.gia.edu/gems-gemology/spring-2012-gem-news-international

Choudhary G., Bhandari R. (2008) A New Type of Synthetic Fire Opal: Mexifire. *Gems & Gemology*, Vol. 44, No. 3
https://www.gia.edu/gems-gemology/fall-2008-synthetic-fire-opal-choudhary

Schmetzer K., Henn U. (1987) Synthetic or Imitation? An Investigation of the Products of Kyocera Corporation That Show Play-Of-Color. *Gems & Gemology*, Vol. 23, No. 3
https://www.gia.edu/gems-gemology/fall-1987-synthetic-opal-kyocera-schmetzer

Other

Renfro N. et al. (2010) Synthetic Gem Materials in the 2000s: A Decade in Review. *Gems & Gemology*, Vol. 46, No. 4
https://www.gia.edu/gems-gemology/winter-2010-synthetic-diamonds-renfro

Gem News International: Update on Vanadium-Bearing Synthetic Chrysoberyl (1997) *Gems & Gemology*, Vol. 33, No. 2
https://www.gia.edu/gems-gemology/summer-1997-gem-news-international

Balitsky V.S. et al. (1987) Man-Made Jewelry Malachite. *Gems & Gemology*, Vol. 23, No. 3
https://www.gia.edu/gems-gemology/fall-1987-malachite-russia-balitsky

Kane R.E. (1987) Inamori Synthetic Cat's-Eye Alexandrite. *Gems & Gemology*, Vol. 23, No. 3
https://www.gia.edu/gems-gemology/fall-1987-alexandrite-inamori-created-kane

Nassau K., Shigley J.E. (1987) A Study of the General Electric Synthetic Jadeite. *Gems & Gemology*, Vol. 23, No. 1
https://www.gia.edu/gems-gemology/spring-1987-synthetic-jadeite-nassau

Assignment 12: Detecting Gem Treatments

General Treatment Articles

McClure S.F. et al. (2010) Gemstone Enhancement and its Detection in the 2000s. *Gems & Gemology*, Vol. 46, No. 3
https://www.gia.edu/gems-gemology/fall-2010-detection-disclosure-heating-mcclure

Overton T.W., Shigley J.E. (2008) A History of Diamond Treatments. *Gems & Gemology*, Vol. 44, No. 1
https://www.gia.edu/gems-gemology/spring-2008-history-of-diamond-treatments-overton

Overton T.W. (2004) Gem Treatment Disclosure and U.S. Law. *Gems & Gemology*, Vol. 40, No. 2
https://www.gia.edu/gems-gemology/summer-2004-gem-treatment-disclosure-us-law-overton

Kammerling R.C. et al. (1990) Gemstone Enhancement and its Detection in the 1980s. *Gems & Gemology*, Vol. 26, No. 1
https://www.gia.edu/gems-gemology/spring-1990-gemstone-enhancement-kammerling

Heat Treatment

Pardieu V. et al. (2015) GIA Lab Reports on Low-Temperature Heat Treatment of Mozambique Ruby.
GIA Research & News
https://www.gia.edu/gia-news-research-low-temperature-heat-treatment-mozambique-ruby

Wang Y. et al. (2014) Experimental Studies on the Heat Treatment of Baltic Amber. *Gems & Gemology*, Vol. 50, No. 2
https://www.gia.edu/gems-gemology/summer-2014-wang-heat-treatment-of-baltic-amber

Koivula J.I. (2013) Useful Visual Clue Indicating Corundum Heat Treatment. *Gems & Gemology*, Vol. 49, No. 3
https://www.gia.edu/gems-gemology/FA13-koivula-corundum-heat-treatment

Saeseaw S. et al. (2009) Distinguishing Heated from Unheated Spinel. GIA Research & News
https://www.gia.edu/ongoing-research/distinguishing-heated-unheated-spinel

Singbamroong S. (2007) Gem News International: Heat-Treated Kashan Flux-Grown Synthetic Ruby.
Gems & Gemology, Vol. 43, No. 2
https://www.gia.edu/gems-gemology/summer-2007-gem-news-international

Emmett J.L., Douthit T.R. (1993) Heat Treating the Sapphires of Rock Creek, Montana. *Gems & Gemology*,
Vol. 29, No. 4
https://www.gia.edu/gems-gemology/winter-1993-montana-sapphires-emmett

Diffusion Treatment

Saeseaw S. et al. (2015) GIA Lab Reports on a New Cobalt Diffusion Treatment of Natural Spinel. *Research News*
https://www.gia.edu/gia-news-research/cobalt-diffusion-natural-spinel-report

Emmett J.L. et al. (2003) Beryllium Diffusion of Ruby and Sapphire. *Gems & Gemology*, Vol. 39, No. 2
https://www.gia.edu/gems-gemology/summer-2003-beryllium-diffusion-ruby-sapphire-emmett

McClure S.F. et al. (2002) Gem News International: Special Report: A New Corundum Treatment from Thailand.
Gems & Gemology, Vol. 38, No. 1
https://www.gia.edu/gems-gemology/spring-2002-gem-news-international

McClure S.F. et al. (1993) Update on Diffusion-Treated Corundum: Red and Other Colors. *Gems & Gemology*,
Vol. 29, No. 1
https://www.gia.edu/gems-gemology/spring-1993-diffusion-treated-sapphire-mcclure

Kane R.E. et al. (1990) The Identification of Blue Diffusion-Treated Sapphires. *Gems & Gemology*, Vol. 26, No. 2
https://www.gia.edu/gems-gemology/summer-1990-diffusion-treated-sapphire-kane

Other Corundum Treatments and Treatment Combinations

Singbamroong S. et al. (2015) Gem News International: Synthetic Sapphire with Diffusion-Induced Color and Star. *Gems & Gemology*, Vol. 51, No. 2
https://www.gia.edu/gems-gemology/summer-2015-gemnews-synthetic-sapphire-diffusion-induced-color-star

Sun Z. (2015) Lab Notes: Beryllium-Diffused and Lead Glass–Filled Orange Sapphire. *Gems & Gemology*, Vol. 51, No. 2
https://www.gia.edu/gems-gemology/summer-2015-labnotes-beryllium-diffused-orange-sapphire

Pardieu V. et al. (2010) Flux-Heated and Glass-Filled Rubies from Mozambique. GIA Research & News
https://www.gia.edu/ongoing-research/flux-heated-and-glass-filled-rubies-from-mozambique

Kane R.E. (1984) Natural Rubies with Glass-Filled Cavities. *Gems & Gemology*, Vol. 20, No. 4
https://www.gia.edu/gems-gemology/winter-1984-ruby-glass-kane

Koivula J.I. (1983) Induced Fingerprints. *Gems & Gemology*, Vol. 19, No. 4
https://www.gia.edu/gems-gemology/winter-1983-inclusions-koivula

HPHT Treatment of Diamond

Chan S. (2015) Lab Notes: Yellow HPHT-Processed Rough Diamond. *Gems & Gemology*, Vol. 51, No. 3
https://www.gia.edu/gems-gemology/fall-2015-labnotes-yellow-hpht-processed-rough-diamond

Smith C.P. et al. (2000) GE POL Diamonds: Before and After. *Gems & Gemology*, Vol. 36, No. 3
https://www.gia.edu/gems-gemology/fall-2000-ge-pol-diamonds-smith

Fisher D., Spits R.A. (2000) Spectroscopic Evidence of GE POL HPHT-Treated Natural Type IIA Diamonds. *Gems & Gemology*, Vol. 36, No. 1
https://www.gia.edu/gems-gemology/spring-2000-hpht-treated-type-iia-diamonds-fisher

Schmetzer K. (1999) Clues to the Process Used by General Electric to Enhance the GE POL Diamonds. *Gems & Gemology*, Vol. 35, No. 4
https://www.gia.edu/gems-gemology/winter-1999-general-electric-enhanced-diamonds-schmetzer

Clarity Enhancement

Suthiyuth R., Weeramonkhonlert V. (2016) Lab Notes: Hydrophane Opal Treatment. *Gems & Gemology*, Vol. 52, No. 1
https://www.gia.edu/gems-gemology/spring-2016-labnotes-hydrophane-opal-treatment

York P. (2013) Lab Notes: Green Sapphire Filled with Glass. *Gems & Gemology*, Vol. 49, No. 3
https://www.gia.edu/gems-gemology/FA13-LN-green-glass-filled-sapphire

Pardieu V. et al. (2010) Lead Glass-Filled Star Rubies Reportedly from Madagascar. GIA Research & News
https://www.gia.edu/ongoing-research/lead-glass-filled-star-rubies-reportedly-from-madagascar

McClure S.F. et al. (2006) Identification and Durability of Lead Glass–Filled Rubies. *Gems & Gemology*, Vol. 42, No. 1
https://www.gia.edu/gems-gemology/spring-2006-identification-lead-glass-filled-rubies-mcclure

Shigley J.E. et al. (2000) New Filling Material for Diamonds from Oved Diamond Company: A Preliminary Study. *Gems & Gemology*, Vol. 36, No. 2
https://www.gia.edu/gems-gemology/summer-2000-filling-material-diamonds-oved-shigley

McClure S. et al. (2000) A New Lasering Technique for Diamond. *Gems & Gemology*, Vol. 36, No. 2
https://www.gia.edu/gems-gemology/summer-2000-lasering-technique-diamond-mcclure

McClure S.F., Kammerling R.C. (1995) A Visual Guide to the Identification of Filled Diamonds. *Gems & Gemology*, Vol. 31, No. 2
https://www.gia.edu/gems-gemology/summer-1995-identification-filled-diamond-mcClure

Kammerling R.C. et al. (1994) An Update on Filled Diamonds: Identification and Durability. *Gems & Gemology*, Vol. 30, No. 3
https://www.gia.edu/gems-gemology/fall-1994-diamond-treatment-kammerling

Koivula J.I. et al. (1989) The Characteristics and Identification of Filled Diamonds. *Gems & Gemology*, Vol. 25, No. 2
https://www.gia.edu/gems-gemology/summer-1989-diamond-filling-koivula

Irradiation

Moe K.S. et al. (2015) Lab Notes: Irradiated Green-Blue CVD Synthetic Diamonds. *Gems & Gemology*, Vol. 51, No. 3
https://www.gia.edu/gems-gemology/fall-2015-labnotes-irradiated-green-blue-cvd-synthetic-diamonds

Wang W. (2014) Lab Notes: Very Large Irradiated Yellow Diamond. *Gems & Gemology*, Vol. 50, No. 4
https://www.gia.edu/gems-gemology/winter-2014-labnotes-irradiated-yellow-diamond

Ardon T., Wang W. (2014) Lab Notes: Heavily Irradiated CVD Synthetic Diamond. *Gems & Gemology*, Vol. 50, No. 3
https://www.gia.edu/gems-gemology/fall-2014-labnotes-irradiated-cvd-synthetic-diamond

Nazz M., Johnson P. (2013) Lab Notes: Green Diamond, Treated with Radioactive Salt. *Gems & Gemology*, Vol. 49, No. 1
https://www.gia.edu/gems-gemology/spring-2013-labnotes-green-radioactive-salt

Fritsch E., Shigley J.E. (1989) Contribution to the Identification of Treated Colored Diamonds: Diamonds with Peculiar Color-Zoned Pavilions. *Gems & Gemology*, Vol. 25, No. 2
https://www.gia.edu/gems-gemology/summer-1989-color-treated-diamond-fritsch

Nassau K. (1985) Altering the Color of Topaz. *Gems & Gemology*, Vol. 21, No. 1
https://www.gia.edu/gems-gemology/spring-1985-topaz-color-nassau

Rossman G.R., Qiu Y. (1982) Radioactive Irradiated Spodumene. *Gems & Gemology*, Vol. 18, No. 2
https://www.gia.edu/gems-gemology/summer-1982-irradiated-spodumene-rossman

Crowningshield R. (1981) Irradiated Topaz and Radioactivity. *Gems & Gemology*, Vol. 17, No. 4
https://www.gia.edu/gems-gemology/winter-1981-radioactivity-topaz-crowningshield

Coating

Cooper A., Renfro N. (2014) Titanium-Coated Tanzanite. GIA Research & News
https://www.gia.edu/gia-news-research-titanium-coated-tanzanite-cooper

Zhang J. et al. (2013) Gemological Characteristics of Coated Jadeite Jade. *Gems & Gemology*, Vol. 49, No. 4
https://www.gia.edu/gems-gemology/gemological-characteristics-coated-jadeite-jade

McClure S.F., Shen A.H. (2008) Coated Tanzanite. *Gems & Gemology*, Vol. 44, No. 2
https://www.gia.edu/gems-gemology/summer-2008-coated-tanzanite-mcclure

Gabasch H. et al. (2008) Coloring of Topaz by Coating and Diffusion Processes: An X-Ray Photoemission Study of What Happens Beneath the Surface. *Gems & Gemology*, Vol. 44, No. 2
https://www.gia.edu/gems-gemology/summer-2008-coloring-topaz-coating-diffusion-gabasch

Shen A.H. et al. (2007) Serenity Coated Colored Diamonds: Detection and Durability. *Gems & Gemology*, Vol. 43, No. 1
https://www.gia.edu/gems-gemology/spring-2007-serenity-coated-colored-diamonds-shen

Evans D.J.F. et al. (2005) Coated Pink Diamond — A Cautionary Tale. *Gems & Gemology*, Vol. 41, No. 1
https://www.gia.edu/gems-gemology/spring-2005-coated-pink-diamond-evans

Crowningshield G.R. (1995) Lab Notes: Imitation Emerald Plastic-Coated Beryl. *Gems & Gemology*, Vol. 31, No. 3
https://www.gia.edu/gems-gemology/fall-1995-lab-notes

Miles E.R. (1964) Coated Diamonds. *Gems & Gemology*, Vol. 11, No. 6
https://www.gia.edu/doc/summer_1964.pdf

Miles E.R. (1962) Diamond-Coating Techniques and Methods of Detection. *Gems & Gemology*, Vol. 10, No. 12
https://www.gia.edu/doc/winter_1962.pdf

Dyeing

Hand D. (2015) Lab Notes: Dyed and Natural Green Jadeite. *Gems & Gemology*, Vol. 51, No. 3
https://www.gia.edu/gems-gemology/fall-2015-labnotes-dyed-natural-green-jadeite

Choudhary G. (2014) Gem News International: Dyed Bone as a Red Coral Imitation. *Gems & Gemology*, Vol. 50, No. 2
https://www.gia.edu/gems-gemology/summer-2014-gemnews-red-coral-imitation

Lu R. (2012) Color Origin of Lavender Jadeite: An Alternative Approach. *Gems & Gemology*, Vol. 48, No. 4
https://www.gia.edu/gems-gemology/winter-2012-lavender-jadeite-lu

Renfro N., McClure S.F. (2011) Dyed Purple Hydrophane Opal. *Gems & Gemology*, Vol. 47, No. 4
https://www.gia.edu/gems-gemology/winter-2011-hydrophane-opal-renfro

Schmetzer K. et al. (1992) Dyed Natural Corundum as a Ruby Imitation. *Gems & Gemology*, Vol. 28, No. 2
https://www.gia.edu/gems-gemology/summer-1992-dyed-corundum-ruby-schmetzer

Koivula J.I. (1982) Some Observations on the Treatment of Lavender Jadeite. *Gems & Gemology*, Vol. 18, No. 1
https://www.gia.edu/gems-gemology/spring-1982-jadeite-color-koivula

Quench-Crackling

Saeseaw S., Khowpong C. (2016) Lab Notes: Quench-Crackled Blue Synthetic Spinel. *Gems & Gemology*, Vol. 52, No. 1
https://www.gia.edu/gems-gemology/spring-2016-labnotes-quench-crackled-blue-synthetic-spinel

Bleaching and Polymer Impregnation

Fritsch E. et al. (1992) Identification of Bleached and Polymer-Impregnated Jadeite. *Gems & Gemology*, Vol. 28, No. 3
https://www.gia.edu/gems-gemology/fall-1992-bleaching-jadeite-fritsch

Sugar Treatment

Brown G. (1991) Treated Andamooka Matrix Opal. *Gems & Gemology*, Vol. 27, No. 2
https://www.gia.edu/gems-gemology/summer-1991-andamooka-matrix-opal-brown

General

McClure S.F. et al. (2010) Gemstone Enhancement and Its Detection in the 2000s. *Gems & Gemology*, Vol. 46, No. 3
https://www.gia.edu/gems-gemology/fall-2010-detection-disclosure-heating-mcclure

Overton T.W. (2004) Gem Treatment Disclosure and U.S. Law. *Gems & Gemology*, Vol. 40, No. 2
https://www.gia.edu/gems-gemology/summer-2004-gem-treatment-disclosure-us-law-overton

Smith C.P., McClure S.F. (2002) Chart of Commercially Available Gem Treatments. *Gems & Gemology*, Vol. 38, No. 4
https://www.gia.edu/gems-gemology/winter-2002-commercially-available-gem-treatments-smith

Nassau K. (1984) The Early History of Gemstone Treatments. *Gems & Gemology*, Vol. 20, No. 1
https://www.gia.edu/gems-gemology/spring-1984-gem-treatment-nassau

For Further Reading

Gems & Gemology (G&G), GIA's professional journal, provides in-depth feature articles on the latest gemological research, from gem treatments, synthetics, and the evaluation of gem quality to developments in gem production, market sources, and more.

To give you the opportunity to learn more about the subjects you are studying and enrich your gemological knowledge, a list of *G&G* articles relevant to each *Gem Identification* assignment is provided below. It is important to note that this reading is optional. You will not be tested on the content of these articles.

All *G&G* articles are available for download free of charge on GIA's website, www.gia.edu. Copies of these articles are also available at your GIA campus location. Check with your instructor for access to them.

Scan the QR code above or go to https://www.gia.edu/library to access articles for further reading.

Assignment 13: Separating Red, Pink, and Purple Gems

Pink-to-Red Diamond

Eaton-Magaña S. (2016) Lab Notes: Treated Pink Type IIa Diamond Colored by Red Luminescence. *Gems & Gemology*, Vol. 52, No. 3
https://www.gia.edu/gems-gemology/fall-2016-labnotes-treated-pink-type-IIa-diamond-colored-red-luminescence

Moe K.S., Wang W. (2015) Lab Notes: Treated Pink Diamond with HPHT Synthetic Growth Structure. *Gems & Gemology*, Vol. 51, No. 4
https://www.gia.edu/gems-gemology/winter-2015-labnotes-treated-pink-diamond-hpht-synthetic-growth-structure

King J. et al. (2014) Exceptional Pink to Red Diamonds: A Celebration of the 30th Argyle Diamond Tender. *Gems & Gemology*, Vol. 50, No. 4
https://www.gia.edu/gems-gemology/winter-2014-pink-to-red-diamonds-30th-argyle-diamond-tender

Ardon T., Eaton-Magaña S. (2013) Lab Notes: Large Pinkish Brown CVD Synthetic Diamond. *Gems & Gemology*, Vol. 49, No. 3
https://www.gia.edu/gems-gemology/FA13-LN-pinkish-brown-CVD-synthetic

Moe K.S. (2013) Lab Notes: Large HPHT-Treated Fancy Pink Diamond. *Gems & Gemology*, Vol. 49, No. 1
https://www.gia.edu/gems-gemology/spring-2013-labnotes-hpht-fancy-pink

Wang W. et al. (2010) Strongly Colored Pink CVD Lab-Grown Diamonds. *Gems & Gemology*, Vol. 46, No. 1
https://www.gia.edu/gems-gemology/spring-2010-pink-cvd-diamonds-wang

Wang W. (2009) CVD-Grown Pink Diamonds. *Research News*
https://www.gia.edu/ongoing-research/cvd-grown-pink-diamonds

Johnson P., Breeding C.M. (2009) Treated Fancy Red Diamond. *Research News*
https://www.gia.edu/ongoing-research/treated-fancy-red-diamond

Wang W. et al. (2005) Treated-Color Pink-To-Red Diamonds from Lucent Diamonds Inc. *Gems & Gemology*, Vol. 41, No. 1
https://www.gia.edu/gems-gemology/spring-2005-treated-color-diamonds-lucent-wang

King J.M. et al. (2002) Characterization and Grading of Natural-Color Pink Diamonds. *Gems & Gemology*, Vol. 38, No. 2
https://www.gia.edu/gems-gemology/summer-2002-grading-natural-pink-diamonds-king

Moses T.M. et al. (1993) Two Treated-Color Synthetic Red Diamonds Seen in the Trade. *Gems & Gemology*, Vol. 29, No. 3
https://www.gia.edu/gems-gemology/fall-1993-synthetic-red-diamond-moses

Ruby and Pink-to-Red Corundum

Saeseaw S. et al. (2016) Gem News International: Preliminary Study on Rubies Reportedly from Pokot, Kenya. *Gems & Gemology*, Vol. 52, No. 3
https://www.gia.edu/gems-gemology/fall-2016-gemnews-preliminary-study-rubies-reportedly-pokot-kenya

Liu Y., Lu R. (2016) Gem News International: Ruby and Sapphire from Muling, China. *Gems & Gemology*, Vol. 52, No. 1
https://www.gia.edu/gems-gemology/spring-2016-gemnews-ruby-sapphire-muling-china

Sorokina E.S. et al. (2015) Rubies and Sapphires from Snezhnoe, Tajikistan. *Gems & Gemology*, Vol. 51, No. 2
https://www.gia.edu/gems-gemology/summer-2015-rubies-sapphires-snezhnoe-tajikistan

Series of Articles on Rubies from Mozambique (2014) GIA Research & News
https://www.gia.edu/gia-news-research-mozambique-montepuez-rubies

Khoi N.N. et al. (2011) Ruby and Sapphire from the Tan Huong-Truc Lau Area, Yen Bai Province, Northern Vietnam. *Gems & Gemology*, Vol. 47, No. 3
https://www.gia.edu/gems-gemology/fall-2011-ruby-sapphire-khol

McClure S.F., Koivula J.I. (2009) Gem News International: Preliminary Observations on New Rubies from Mozambique. *Gems & Gemology*, Vol. 45, No. 3
https://www.gia.edu/gems-gemology/fall-2009-gem-news-international

Thirangoon K. (2009) Ruby and Pink Sapphire from Aappaluttoq, Greenland: Status of Ongoing Research. GIA Research & News
https://www.gia.edu/gia-news-research-nr32309

Schwarz D. et al. (2008) Rubies and Sapphires from Winza, Central Tanzania. *Gems & Gemology*, Vol. 44, No. 4
https://www.gia.edu/gems-gemology/winter-2008-rubies-sapphires-tanzania-schwarz

Hänni H.A. (2008) Gem News International: New Rubies from Central Tanzania. *Gems & Gemology*, Vol. 44, No. 2
https://www.gia.edu/gems-gemology/summer-2008-gem-news-international

Laurs B.M. (2007) Gem News International: New Sources of Marble-Hosted Rubies in South Asia. *Gems & Gemology*, Vol. 43, No. 3
https://www.gia.edu/gems-gemology/fall-2007-gem-news-international

Bowersox G.W. et al. (2000) Ruby and Sapphire from Jegdalek, Afghanistan. *Gems & Gemology*, Vol. 36, No. 2
https://www.gia.edu/gems-gemology/summer-2000-ruby-sapphire-afghanistan-bowersox

Muhlmeister S. et al. (1998) Separating Natural and Synthetic Rubies on the Basis of Trace-Element Chemistry. *Gems & Gemology*, Vol. 34, No. 2
https://www.gia.edu/gems-gemology/summer-1998-separating-natural-synthetic-rubies-mulhmeister

Smith C.P. et al. (1997) Rubies and Fancy-Color Sapphires from Nepal. *Gems & Gemology*, Vol. 33, No. 1
https://www.gia.edu/gems-gemology/spring-1997-rubies-fancy-color-sapphire-nepal-smith

Peretti A. et al. (1995) Rubies from Mong Hsu. *Gems & Gemology*, Vol. 31, No. 1
https://www.gia.edu/gems-gemology/spring-1995-ruby-mong-hsu-peretti

Kissin A.J. (1994) Ruby and Sapphire from the Southern Ural Mountains, Russia. *Gems & Gemology*, Vol. 30, No. 4
https://www.gia.edu/gems-gemology/winter-1994-ruby-sapphire-russia-kissin

Hänni H., Schmetzer K. (1991) New Rubies from the Morogoro Area, Tanzania. *Gems & Gemology*, Vol. 27, No. 3
https://www.gia.edu/gems-gemology/fall-1991-rubies-tanzania-hanni

Kane R.E. et al. (1991) Rubies and Fancy Sapphires from Vietnam. *Gems & Gemology*, Vol. 27, No. 3
https://www.gia.edu/gems-gemology/fall-1991-sapphire-ruby-vietnam-kane

Treated Red Corundum

McClure S.F. et al. (2006) Identification and Durability of Lead Glass–Filled Rubies. *Gems & Gemology*, Vol. 42, No. 1
https://www.gia.edu/gems-gemology/spring-2006-identification-lead-glass-filled-rubies-mcclure

McClure S.F. et al. (1993) Update on Diffusion-Treated Corundum: Red and Other Colors. *Gems & Gemology*, Vol. 29, No. 1
https://www.gia.edu/gems-gemology/spring-1993-diffusion-treated-sapphire-mcclure

Pink-to-Red Spinel

Vertriest W., Raynaud V. (2017) Micro-World: Complex Yellow Fluid Inclusions in Red Burmese Spinel. *Gems & Gemology*, Vol. 53, No. 4
https://www.gia.edu/gems-gemology/winter-2017-microworld-complex-yellow-fluid-inclusions

Sturman N. (2009) Lab Notes: Purplish Pink Spinel from Tajikistan—Before and After Cutting. *Gems & Gemology*, Vol. 45, No. 1
https://www.gia.edu/gems-gemology/spring-2009-lab-notes

Saeseaw S. et al. (2009) Distinguishing Heated Spinels from Unheated Natural Spinels and from Synthetic Spinels. GIA Research & News
https://www.gia.edu/ongoing-research/distinguishing-heated-unheated-spinel

Quinn P.Q., Laurs B.M. (2004) Gem News International: Pink to Pink-Orange Spinel from Tanzania. *Gems & Gemology*, Vol. 40, No. 1
https://www.gia.edu/gems-gemology/spring-2004-gem-news-international

Muhlmeister S. et al. (1993) Flux-Grown Synthetic Red and Blue Spinels from Russia. *Gems & Gemology*, Vol. 29, No. 2
https://www.gia.edu/gems-gemology/summer-1993-synthetic-spinel-russia-muhlmeister

Garnet

Sangsawong S. et al. (2016) Gem News International: Purple Pyrope-Almandine Garnet from Mozambique. *Gems & Gemology*, Vol. 52, No. 3
https://www.gia.edu/gems-gemology/fall-2016-gemnews-purple-pyrope-almandine-garnet-mozambique

Sun Z. et al. (2015) Vanadium- and Chromium-Bearing Pink Pyrope Garnet: Characterization and Quantitative Colorimetric Analysis. *Gems & Gemology*, Vol. 51, No. 4
https://www.gia.edu/gems-gemology/winter-2015-vanadium-chromium-bearing-pink-pyrope-garnet-characterization-quantitative-colorimetric-analysis

Schlüter J., Weitschat W. (1991) Bohemian Garnet – Today. *Gems & Gemology*, Vol. 27, No. 3
https://www.gia.edu/gems-gemology/fall-1991-bohemian-garnet-schluter

Stockton C.M. (1988) Pastel Pyropes. *Gems & Gemology*, Vol. 24, No. 2
https://www.gia.edu/gems-gemology/summer-1988-garnet-identification-stockton

Pink-to-Red Tourmaline

Befi R. et al. (2009) Gem News International: New Tourmaline Production from Keffi, Nigeria. *Gems & Gemology*, Vol. 45, No. 3
https://www.gia.edu/gems-gemology/fall-2009-gem-news-international

Laurs B.M. (2009) Gem News International: "Lilac"-Colored Cu-Bearing Tourmaline from Nigeria. *Gems & Gemology*, Vol. 45, No. 3
https://www.gia.edu/gems-gemology/fall-2009-gem-news-international

Dirlam D. et al. (2002) Liddicoatite Tourmaline from Anjanabonoina, Madagascar. *Gems & Gemology*, Vol. 38, No. 1
https://www.gia.edu/gems-gemology/spring-2002-liddicoatite-tourmaline-madagascar

Pink-to-Red Topaz

Gübelin E. et al. (1986) Pink Topaz from Pakistan. *Gems & Gemology*, Vol. 22, No. 3
https://www.gia.edu/gems-gemology/fall-1986-pink-topaz-gubelin

Pink-to-Red Beryl

Moe K.S. (2012) Gem News International: Morganite from Ethiopia. *Gems & Gemology*, Vol. 48, No. 2
https://www.gia.edu/gems-gemology/summer-2012-gem-news-international

Shigley J.E. et al. (2003) Red Beryl from Utah: A Review and Update. *Gems & Gemology*, Vol. 39, No. 4
https://www.gia.edu/gems-gemology/winter-2003-red-beryl-utah-shigley

Simmons W.B. et al. (2003) Gem News International: A New Saturated Purplish Pink Cs-"Beryl" from Madagascar: Preliminary Analyses. *Gems & Gemology*, Vol. 39, No. 1
https://www.gia.edu/gems-gemology/spring-2003-gem-news-international

Laurs B.M., Quinn E. (2002) Gem News International: New Morganite Mine in Madagascar. *Gems & Gemology*, Vol. 38, No. 3
https://www.gia.edu/gems-gemology/fall-2002-gem-news-international

Kampf A.R., Francis C.A. (1989) Beryl Gem Nodules from the Bananal Mine, Minas Gerais, Brazil. *Gems & Gemology*, Vol. 25, No. 1
https://www.gia.edu/gems-gemology/spring-1989-beryl-brazil-kampf

Shigley J.E., Foord E.E. (1984) Gem-Quality Red Beryl from the Wah Wah Mountains, Utah. *Gems & Gemology*, Vol. 20, No. 4
https://www.gia.edu/gems-gemology/winter-1984-beryl-utah-shigley

Purple Quartz

Suthiyuth R. (2015) Gem News International: Amethyst from Morocco: An Update. *Gems & Gemology*, Vol. 51, No. 1
https://www.gia.edu/gems-gemology/spring-2015-gemnews-amethyst-morocco-update

Troilo F. et al. (2015) Amethyst from Boudi, Morocco. *Gems & Gemology*, Vol. 51, No. 1
https://www.gia.edu/gems-gemology/spring-2015-amethyst-from-boudi-morocco

Beaton D. (2009) Gem News International: Gem-Quality Amethyst from Tata, Morocco. *Gems & Gemology*, Vol. 45, No. 1
https://www.gia.edu/gems-gemology/spring-2009-gem-news-international

Weldon R. (2009) Gem News International: Anahí's "New" Ametrine. *Gems & Gemology*, Vol. 45, No. 1
https://www.gia.edu/gems-gemology/spring-2009-anahi-ametrine-mine

Lowell J., Koivula J.I. (2004) Amethyst from Four Peaks, Arizona. *Gems & Gemology*, Vol. 40, No. 3
https://www.gia.edu/gems-gemology/fall-2004-amethyst-four-peaks-arizona-lowell

Koivula J.I., Fritsch E. (1989) The Growth of Brazil-Twinned Synthetic Quartz and the Potential for Synthetic Amethyst Twinned on the Brazil Law. *Gems & Gemology*, Vol. 25, No. 3
https://www.gia.edu/gems-gemology/fall-1989-synthetic-quartz-koivula

Kunzite Spodumene

Mauthner M. (2010) Gem News International: Recent Finds of Kunzite in Pala, California. *Gems & Gemology*, Vol. 46, No. 2
https://www.gia.edu/gems-gemology/summer-2010-gem-news-international

Evans M. (2008) Gem News International: New Find of Vivid Kunzite from Pala, California. *Gems & Gemology*, Vol. 44, No. 4
https://www.gia.edu/gems-gemology/winter-2008-gem-news-international

Oregon Sunstone

Johnston C.L. et al. (1991) Sunstone Labradorite from the Ponderosa Mine, Oregon. *Gems & Gemology*, Vol. 27, No. 4
https://www.gia.edu/gems-gemology/winter-1991-sunstone-oregon-johnston

Red Feldspar (Andesine Controversy)

Abduriyim A. et al. (2011) Research on Gem Feldspar from the Shigatse Region of Tibet. *Gems & Gemology*, Vol. 47, No. 2
https://www.gia.edu/gems-gemology/summer-2011-feldspar-shigatse-tibet-abduriyim

Rossman G.R. (2011) The Chinese Red Feldspar Controversy: Chronology of Research Through July 2009. *Gems & Gemology*, Vol. 47, No. 1
https://www.gia.edu/gems-gemology/spring-2011-chinese-red-feldspar-rossman

Special Report on Red Feldspar (2011) GIA Research & News
https://www.gia.edu/ongoing-research/special-report-on-red-felspar

Abduriyim A. (2010) Gem News International: Additional Field Research on Tibetan Andesine. *Gems & Gemology*, Vol. 46, No. 4
https://www.gia.edu/gems-gemology/winter-2010-gem-news-international

McClure S., Breeding C.M. (2009) Separation of Plagioclase Feldspars via Chemical Analysis. GIA Research & News
https://www.gia.edu/gia-news-research-nr33009A

Abduriyim A. (2008) Gem News International: Visit to Andesine Mines in Tibet and Inner Mongolia. *Gems & Gemology*, Vol. 44, No. 4
https://www.gia.edu/gems-gemology/winter-2008-gem-news-international

Abduriyim A., Kobayashi T. (2008) Gem News International: Gemological Properties of Andesine Collected in Tibet and Inner Mongolia. *Gems & Gemology*, Vol. 44, No. 4
https://www.gia.edu/gems-gemology/winter-2008-gem-news-international

Fritsch E. et al. (2008) Gem News International: "Red Andesine" from China: Possible Indication of Diffusion Treatment. *Gems & Gemology*, Vol. 44, No. 2
https://www.gia.edu/gems-gemology/summer-2008-gem-news-international

Pink-to-Red Opal

Renfro N., McClure S.F. (2011) Dyed Purple Hydrophane Opal. *Gems & Gemology*, Vol. 47, No. 4
https://www.gia.edu/gems-gemology/winter-2011-hydrophane-opal-renfro

Rhodochrosite

Choudhary G., Vyas M.B. (2011) Gem News International: An Exceptional Rhodochrosite Carving. *Gems & Gemology*, Vol. 47, No. 3
https://www.gia.edu/gems-gemology/fall-2011-gem-news-international

Lees B.K. (2009) Gem News International: Gem-Quality Rhodochrosite from China. *Gems & Gemology*, Vol. 45, No. 1
https://www.gia.edu/gems-gemology/spring-2009-gem-news-international

Knox K., Lees B.K. (1997) Gem Rhodochrosite from the Sweet Home Mine, Colorado. *Gems & Gemology*, Vol. 33, No. 2
https://www.gia.edu/gems-gemology/summer-1997-rhodochrosite-colorado-knox

Sugilite

Shigley J.E. et al. (1987) The Occurrence and Gemological Properties of Wessels Mine Sugilite. *Gems & Gemology*, Vol. 23, No. 2
https://www.gia.edu/gems-gemology/summer-1987-sugilite-wessels-shigley

Assignment 14: Separating Blue and Violet Gems

Blue Diamond

Poon T., Wang W. (2016) Lab Notes: Blue HPHT Synthetic Diamond Over 10 Carats. *Gems & Gemology*, Vol. 52, No. 4
https://www.gia.edu/gems-gemology/winter-2016-labnotes-blue-HPHT-synthetic-diamond-over-10-carats

Moe K.S. et al. (2016) Lab Notes: Largest Blue HPHT Synthetic Diamond. *Gems & Gemology*, Vol. 52, No. 1
https://www.gia.edu/gems-gemology/spring-2016-labnotes-largest-blue-hpht-synthetic-diamond

Johnson P., Wang W. (2015) Lab Notes: Intense Blue Diamond with Very High Boron Concentration. *Gems & Gemology*, Vol. 51, No. 2
https://www.gia.edu/gems-gemology/summer-2015-labnotes-blue-diamond-high-boron-concentration

Gaillou E. et al. (2014) Study of the Blue Moon Diamond. *Gems & Gemology*, Vol. 50, No. 4
https://www.gia.edu/gems-gemology/winter-2014-blue-moon-diamond

Dröschel R. et al. (2008) The Wittelsbach Blue. *Gems & Gemology*, Vol. 44, No. 4
https://www.gia.edu/gems-gemology/winter-2008-wittelsbach-blue-droschel

King J.M. et al. (1998) Characterizing Natural-Color Type IIB Blue Diamonds. *Gems & Gemology*, Vol. 34, No. 4
https://www.gia.edu/gems-gemology/winter-1998-blue-diamonds-king

Blue-to-Violet Sapphire

Renfro N.D. et al. (2017) Inclusions in Natural, Synthetic, and Treated Sapphire. *Gems & Gemology*, Vol. 53, No. 2
https://www.gia.edu/gems-gemology/summer-2017-inclusions-sapphire

Sapphire Chart Article: Suggested Reading on Sapphires and Their Inclusions (2017) *Gems & Gemology*, Vol. 53, No. 2
https://www.gia.edu/gems-gemology/summer-2017-summer-2017-suggested-reading-inclusions-sapphires

Saeseaw S. et al. (2017) A Study of Sapphire from Chanthaburi, Thailand and Its Gemological Characteristics. GIA Research & News
https://www.gia.edu/gia-news-research/sapphire-chanthaburi-thailand-gemological-characteristics

Soonthorntantikul W. et al. (2017) An In-Depth Gemological Study of Blue Sapphires from the Baw Mar Mine (Mogok, Myanmar). *Research News*
https://www.gia.edu/gia-news-research/blue-sapphires-baw-mar-mine-mogok-myanmar

Pardieu V. et al. (2017) Sapphires from the Gem Rush Bemainty Area, Ambatondrazaka (Madagascar). *Research News*
https://www.gia.edu/gia-news-research/sapphires-gem-rush-bemainty-ambatondrazaka-madagascar

Vertriest W. et al. (2016) Gem News International: Blue Sapphire Reportedly from Badakhshan, Afghanistan. *Gems & Gemology*, Vol. 52, No. 3
https://www.gia.edu/gems-gemology/fall-2016-gemnews-blue-sapphire-badakhshan-afghanistan

Pardieu V. et al. (2016) Gem News International: Blue Sapphires from a New Deposit Near Andranondambo, Madagascar. *Gems & Gemology*, Vol. 52, No. 1
https://www.gia.edu/gems-gemology/spring-2016-gemnews-blue-sapphires-new-deposit-andranondambo-madagascar

Pardieu V. et al. (2014) New Nigerian Source of Blue Sapphire. GIA Research & News
https://www.gia.edu/gia-news-research-nigerian-source-blue-sapphire

Kan-Nyunt H.P. et al. (2013) Blue Sapphires from the Baw Mar Mine in Mogok. *Gems & Gemology*, Vol. 49, No. 4
https://www.gia.edu/gems-gemology/WN13-Karampelas-Blue-Sapphires-Mogok

Dharmaratne P.G.R. et al. (2012) Sapphires from Thammannawa, Kataragama Area, Sri Lanka. *Gems & Gemology*, Vol. 48, No. 2
https://www.gia.edu/gems-gemology/summer-2012-sapphires-thammannawa-dharmaratne

Pardieu V. et al. (2012) Gem News International: Blue Sapphire Discovery Near Kataragama, Sri Lanka. *Gems & Gemology*, Vol. 48, No. 2
https://www.gia.edu/gems-gemology/summer-2012-gem-news-international

Khoi N.N. et al. (2011) Ruby and Sapphire from the Tan Huong-Truc Lau Area, Yen Bai Province, Northern Vietnam. *Gems & Gemology*, Vol. 47, No. 3
https://www.gia.edu/gems-gemology/fall-2011-ruby-sapphire-khol

Pardieu V. (2009) Concise Field Report: Pailin, Cambodia. *Research News*
https://www.gia.edu/gia-news-research-nr51409

DuToit G. et al. (2009) Beryllium-Treated Blue Sapphire: Continuing Market Observations and Update. GIA Research & News
https://www.gia.edu/ongoing-research/beryllium-treated-blue-sapphire

Pardieu V. et al. (2009) Sapphires Reportedly from the Batakundi/Basil Area. GIA Research & News
https://www.gia.edu/ongoing-research/sapphires-reportedly-from-the-batakundi-basil-area

Quinn E.P., Laurs B.M. (2004) Gem News International: Sapphires from Afghanistan and Pakistan. *Gems & Gemology*, Vol. 40, No. 4
https://www.gia.edu/gems-gemology/winter-2004-gem-news-international

Schwarz D. et al. (2000) Sapphires from Antsiranana Province, Northern Madagascar. *Gems & Gemology*, Vol. 36, No. 3
https://www.gia.edu/gems-gemology/fall-2000-sapphires-antsiranana-province-madagascar-schwarz

Bowersox G.W. et al. (2000) Ruby and Sapphire from Jegdalek, Afghanistan. *Gems & Gemology*, Vol. 36, No. 2
https://www.gia.edu/gems-gemology/summer-2000-ruby-sapphire-afghanistan-bowersox

Seifert A.V., Hyrsl J. (1999) Sapphire and Garnet from Kalalani, Tanga Province, Tanzania. *Gems & Gemology*, Vol. 35, No. 2
https://www.gia.edu/gems-gemology/summer-1999-sapphire-garnet-kalalani-seifert

Schwarz D. et al. (1996) Sapphires from the Andranondambo Region, Madagascar. *Gems & Gemology*, Vol. 32, No. 2
https://www.gia.edu/gems-gemology/summer-1996-gem-sapphire-madagascar-schwarz

Smith C.P. et al. (1995) Sapphires from Southern Vietnam. *Gems & Gemology*, Vol. 31, No. 3
https://www.gia.edu/gems-gemology/fall-1995-sapphires-southern-vietnam-smith

Kissin A.J. (1994) Ruby and Sapphire from the Southern Ural Mountains, Russia. *Gems & Gemology*, Vol. 30, No. 4
https://www.gia.edu/gems-gemology/winter-1994-ruby-sapphire-russia-kissin

Guo J. et al. (1992) Sapphires from Changle in Shandong Province, China. *Gems & Gemology*, Vol. 28, No. 4
https://www.gia.edu/gems-gemology/winter-1992-china-sapphires-guo

Schwieger R. (1990) Diagnostic Features and Heat Treatment of Kashmir Sapphires. *Gems & Gemology*, Vol. 26, No. 4
https://www.gia.edu/gems-gemology/winter-1990-kashmir-sapphire-schwieger

Furui W. (1988) The Sapphires of Penglai, Hainan Island, China. *Gems & Gemology*, Vol. 24, No. 3
https://www.gia.edu/gems-gemology/fall-1988-china-sapphire-furui

Keller A.S., Keller P.C. (1986) The Sapphires of Mingxi, Fujian Province, China. *Gems & Gemology*, Vol. 22, No. 1
https://www.gia.edu/gems-gemology/spring-1986-sapphire-china-keller

Coldham T. (1985) Sapphires from Australia. *Gems & Gemology*, Vol. 21, No. 3
https://www.gia.edu/gems-gemology/fall-1985-sapphire-australia-coldham

Atkinson D., Kothavala R.Z. (1983) Kashmir Sapphire. *Gems & Gemology*, Vol. 19, No. 2
https://www.gia.edu/gems-gemology/summer-1983-sapphire-atkinson

Treated Synthetic Sapphire

Sun Z. et al. (2017) Lab Notes: Multi-Elemental Diffused and Melt-Grown Synthetic Sapphire. *Gems & Gemology*, Vol. 53, No. 1
https://www.gia.edu/gems-gemology/spring-2017-labnotes-multi-elemental-diffused-melt-grown-synthetic-sapphire

Blue-to-Violet Spinel

Chauviré B. et al. (2015) Blue Spinel from the Luc Yen District of Vietnam. *Gems & Gemology*, Vol. 51, No. 1
https://www.gia.edu/gems-gemology/spring-2015-blue-spinel-luc-yen-district-vietnam

Overton T.W., Shen A.H. (2011) Gem News International: Cobalt Blue–Colored Spinel from Khuoi Ngan, Vietnam. *Gems & Gemology*, Vol. 47, No. 4
https://www.gia.edu/gems-gemology/winter-2011-gem-news-international

Shigley J.E., Stockton C.M. (1984) 'Cobalt-Blue' Gem Spinels. *Gems & Gemology*, Vol. 20, No. 1
https://www.gia.edu/gems-gemology/spring-1984-spinel-shigley

Copper-Bearing and Blue Tourmaline

Katsurada Y., Sun Z. (2017) Cuprian Liddicoatite Tourmaline. *Gems & Gemology*, Vol. 53, No. 1
https://www.gia.edu/gia-news-research/cuprian-liddicoatite-tourmaline

Laurs B.M. (2009) Gem News International: "Lilac"-Colored Cu-Bearing Tourmaline from Nigeria. *Gems & Gemology*, Vol. 45, No. 3
https://www.gia.edu/gems-gemology/fall-2009-gem-news-international

Laurs B.M. et al. (2008) Copper-Bearing (Paraíba-Type) Tourmaline from Mozambique. *Gems & Gemology*, Vol. 44, No. 1
https://www.gia.edu/gems-gemology/spring-2008-copper-bearing-tourmaline-mozambique-laurs

Choudhary G., Golecha C. (2007) Gem News International: New Tairus Synthetic Beryl Simulating "Paraíba" Tourmaline. *Gems & Gemology*, Vol. 43, No. 4
https://www.gia.edu/gems-gemology/winter-2007-gem-news-international

Laurs B.M., Zwaan J.C. (2007) Gem News International: Field Study of Cu-Bearing Tourmaline Mines in Mozambique. *Gems & Gemology*, Vol. 43, No. 4
https://www.gia.edu/gems-gemology/winter-2007-gem-news-international

Breeding C.M., Rockwell K. (2007) Gem News International: New Cu-Bearing Tourmaline from Nigeria. *Gems & Gemology*, Vol. 43, No. 4
https://www.gia.edu/gems-gemology/winter-2007-gem-news-international

Furuya M. (2007) Copper-Bearing Tourmalines from New Deposits in Paraíba State, Brazil. *Gems & Gemology*, Vol. 43, No. 3
https://www.gia.edu/gems-gemology/fall-2007-copper-bearing-tourmalines-paraiba-brazil-furuya

Abduriyim A. et al. (2006) "Paraíba"-Type Copper-Bearing Tourmaline from Brazil, Nigeria, and Mozambique: Chemical Fingerprinting by LA-ICP-MS. *Gems & Gemology*, Vol. 42, No. 1
https://www.gia.edu/gems-gemology/spring-2006-paraiba-tourmaline-chemical-fingerpinting-abduriyum

Shigley J.E. et al. (2001) An Update on "Paraíba" Tourmaline from Brazil. *Gems & Gemology*, Vol. 37, No. 4
https://www.gia.edu/gems-gemology/winter-2001-paraiba-tourmaline-brazil-shigley

Blue Beryl

Huong L. et al. (2011) Aquamarine from the Thuong Xuan District, Thanh Hoa Province, Vietnam. *Gems & Gemology*, Vol. 47, No. 1
https://www.gia.edu/gems-gemology/spring-2011-aquamarine-topaz-huong

Laurs B.M. (2010) Gem News International: Aquamarine and Heliodor from Indochina. *Gems & Gemology*, Vol. 46, No. 4
https://www.gia.edu/gems-gemology/winter-2010-gem-news-international

Isatelle F. (2010) Gem News International: Dark Blue Aquamarine from Tsaramanga, Madagascar. *Gems & Gemology*, Vol. 46, No. 4
https://www.gia.edu/gems-gemology/winter-2010-gem-news-international

Bocchio R. et al. (2009) Aquamarine from the Masino-Bregaglia Massif, Central Alps, Italy. *Gems & Gemology*, Vol. 45, No. 3
https://www.gia.edu/gems-gemology/fall-2009-aquamarine-masino-bregaglia-bocchio

Iolite

Laurs B.M. (2005) Gem News International: Iolite from Northeastern Brazil. *Gems & Gemology*, Vol. 41, No. 1
https://www.gia.edu/gems-gemology/spring-2005-gem-news-international

Lapis Lazuli

Coenraads R.R., Canut de Bon C. (2000) Lapis Lazuli from the Coquimbo Region, Chile. *Gems & Gemology*, Vol. 36, No. 1
https://www.gia.edu/gems-gemology/spring-2000-lapis-lazuli-chile-coenraads

Bosshart G. (1983) Cobalt Glass as a Lapis Lazuli Imitation. *Gems & Gemology*, Vol. 19, No. 4
https://www.gia.edu/gems-gemology/winter-1983-cobalt-lapis-bosshart

Wyart J. et al. (1981) Lapis-Lazuli from Sar-E-Sang, Badakhshan, Afghanistan. *Gems & Gemology*, Vol. 17, No. 4
https://www.gia.edu/gems-gemology/winter-1981-lapis-afghanistan-wyart

Kyanite

Pradat T., Choudhary G. (2014) Gem News International: Gem-Quality Cr-Rich Kyanite from India. *Gems & Gemology*, Vol. 50, No. 1
https://www.gia.edu/gems-gemology/spring-2014-gemnews-indian-pradat-kyanite

Laurs B.M., Quinn E.P. (2005) Gem News International: Kyanite Widely Available. *Gems & Gemology*, Vol. 41, No. 1
https://www.gia.edu/gems-gemology/spring-2005-gem-news-international

Quinn E.P. (2004) Gem News International: Kyanite from Tanzania. *Gems & Gemology*, Vol. 40, No. 4
https://www.gia.edu/gems-gemology/winter-2004-gem-news-international

Benitoite

Laurs B.M. et al. (1997) Benitoite from the New Idria District, San Benito County, California. *Gems & Gemology*, Vol. 33, No. 3
https://www.gia.edu/gems-gemology/fall-1997-benitoite-california-laurs

Turquoise

Chen Q. et al. (2012) Turquoise from Zhushan County, Hubei Province, China. *Gems & Gemology*, Vol. 48, No. 3
https://www.gia.edu/gems-gemology/fall-2012-turquoise-chen

Choudhary G. (2010) A New Type of Composite Turquoise. *Gems & Gemology*, Vol. 46, No. 2
https://www.gia.edu/gems-gemology/summer-2010-turquoise-composite-choudhary

Douman M., Fritz E.A. (2008) Gem News International: A New Source of Persian Turquoise: Kerman, Iran. *Gems & Gemology*, Vol. 44, No. 2
https://www.gia.edu/gems-gemology/summer-2008-gem-news-international

Moe K.S. et al. (2007) Polymer-Impregnated Turquoise. *Gems & Gemology*, Vol. 43, No. 2
https://www.gia.edu/gems-gemology/summer-2007-polymer-impregnated-turquoise-moe

Fritsch E. et al. (1999) The Identification of Zachery-Treated Turquoise. *Gems & Gemology*, Vol. 35, No. 1
https://www.gia.edu/gems-gemology/spring-1999-identification-zachery-treated-turquoise-fritsch

Fuquan W. (1986) A Gemological Study of Turquoise in China. *Gems & Gemology*, Vol. 22, No. 1
https://www.gia.edu/gems-gemology/spring-1986-china-turquoise-fuquan

Lind T. et al. (1983) The Identification of Turquoise by Infrared Spectroscopy and X-Ray Powder Diffraction. *Gems & Gemology*, Vol. 19, No. 3
https://www.gia.edu/gems-gemology/fall-1983-turquoise-spectroscopy-lind

Blue Opal

Quinn E.P. (2003) Gem News International: Peruvian Blue Opal. *Gems & Gemology*, Vol. 39, No. 4
https://www.gia.edu/gems-gemology/winter-2003-gem-news-international

Assignment 15: Separating Green Gems

Green Diamond

Johnson P., Myagkaya E. (2017) Lab Notes: HPHT Synthetic Diamond with Intense Green Color. *Gems & Gemology*, Vol. 53, No. 1
https://www.gia.edu/gems-gemology/spring-2017-labnotes-synthetic-diamond-intense-green-color

Moe K.S. et al. (2015) Lab Notes: Irradiated Green-Blue CVD Synthetic Diamonds. *Gems & Gemology*, Vol. 51, No. 3
https://www.gia.edu/gems-gemology/fall-2015-labnotes-irradiated-green-blue-cvd-synthetic-diamonds

Nazz M., Johnson P. (2013) Lab Notes: Green Diamond, Treated with Radioactive Salt. *Gems & Gemology*, Vol. 49, No. 1
https://www.gia.edu/gems-gemology/spring-2013-labnotes-green-radioactive-salt

Fritsch E., et al. (1988) Detection of Treatment in Two Unusual Green Diamonds. *Gems & Gemology*, Vol. 24, No. 3
https://www.gia.edu/gems-gemology/fall-1988-green-diamonds-fritsch

Emerald

Renfro N. et al. (2017) Gem News International: A New Discovery of Emeralds from Ethiopia. *Gems & Gemology*, Vol. 53, No. 1
https://www.gia.edu/gems-gemology/spring-2017-gemnews-new-discovery-emeralds-ethiopia

Renfro N. et al. (2016) Inclusions in Natural, Synthetic, and Treated Emerald. *Gems & Gemology*, Vol. 52, No. 4
https://www.gia.edu/gems-gemology/winter-2016-inclusions-natural-synthetic-treated-emerald

Pignatelli I. et al. (2015) Colombian Trapiche Emeralds: Recent Advances in Understanding Their Formation. *Gems & Gemology*, Vol. 51, No. 3
https://www.gia.edu/gems-gemology/fall-2015-colombian-trapiche-emeralds-recent-advances-understanding-formation

Saeseaw S. et al. (2014) Three-Phase Inclusions in Emerald and Their Impact on Origin Determination. *Gems & Gemology*, Vol. 50, No. 2
https://www.gia.edu/gems-gemology/summer-2014-saeseaw-three-phase-inclusions-emerald

Zwaan J.C. et al. (2012) Emeralds from the Fazenda Bonfim Region, Rio Grande do Norte, Brazil. *Gems & Gemology*, Vol. 48, No. 1
https://www.gia.edu/gems-gemology/spring-2012-emeralds-brazil-zwaan

Isatelle F., Pardieu V. (2011) Gem News International: Update on Emerald Mining at Kagem, Zambia. *Gems & Gemology*, Vol. 47, No. 1
https://www.gia.edu/gems-gemology/spring-2011-gem-news-international

Beesley C.R. (2010) Gem News International: Record-Breaking Emerald Discovered in Hiddenite, North Carolina. *Gems & Gemology*, Vol. 46, No. 4
https://www.gia.edu/gems-gemology/winter-2010-gem-news-international

Mychaluk K.A. (2008) Gem News International: Emerald-Bearing Gem Pockets from North Carolina. *Gems & Gemology*, Vol. 44, No. 1
https://www.gia.edu/gems-gemology/spring-2008-gem-news-international

Blauwet D. (2005) Gem News International: New Emerald Deposit in Xinjiang, China. *Gems & Gemology*, Vol. 41, No. 1
https://www.gia.edu/gems-gemology/spring-2005-gem-news-international

Zwaan J.C. et al. (1997) Update on Emeralds from the Sandawana Mines, Zimbabwe. *Gems & Gemology*, Vol. 33, No. 2
https://www.gia.edu/gems-gemology/summer-1997-sandawana-mines-emerald-zwaan

Laskovenkov A.F., Zhernakov V.I. (1995) An Update on the Ural Emerald Mines. *Gems & Gemology*, Vol. 31, No. 2
https://www.gia.edu/gems-gemology/summer-1995-ural-mountains-emeralds-laskovenkov

Kammerling R.C. et al. (1991) Fracture Filling of Emeralds Opticon and Traditional "Oils." *Gems & Gemology*, Vol. 27, No. 2
https://www.gia.edu/gems-gemology/summer-1991-opticon-emerald-kammerling

Schmetzer K. et al. (1991) Emeralds from the Ural Mountains, USSR. *Gems & Gemology*, Vol. 27, No. 2
https://www.gia.edu/gems-gemology/summer-1991-ural-mountains-emerald-schmetzer

Bowersox G. et al. (1991) Emeralds of the Panjshir Valley, Afghanistan. *Gems & Gemology*, Vol. 27, No. 1
https://www.gia.edu/gems-gemology/spring-1991-emeralds-afghanistan-bowersox

Epstein D.S. (1989) The Capoeirana Emerald Deposit near Nova Era, Minas Gerais, Brazil. *Gems & Gemology*, Vol. 25, No. 3
https://www.gia.edu/gems-gemology/fall-1989-brazil-emeralds-epstein

Ringsrud R. (1986) The Coscuez Mine: A Major Source of Colombian Emeralds. *Gems & Gemology*, Vol. 22, No. 2
https://www.gia.edu/gems-gemology/summer-1986-colombia-emeralds-ringsrud

Cassedanne J.P., Sauer D.A. (1984) The Santa Terezinha de Goias Emerald Deposit. *Gems & Gemology*, Vol. 20, No. 1
https://www.gia.edu/gems-gemology/spring-1984-emerald-cassedanne

Beryl

Lahti S.I., Kinnunen K.A. (1993) A New Gem Beryl Locality: Luumäki, Finland. *Gems & Gemology*, Vol. 29, No. 1
https://www.gia.edu/gems-gemology/spring-1993-finland-beryl-lahti

Jadeite

Zhang J. et al. (2013) Gemological Characteristics of Coated Jadeite Jade. *Gems & Gemology*, Vol. 49, No. 4
https://www.gia.edu/gems-gemology/gemological-characteristics-coated-jadeite-jade

McClure S.F. (2012) The Jadeite/Omphacite Nomenclature Question. GIA Research & News
https://www.gia.edu/ongoing-research/the-jadeite-omphacite-nomenclature-question

Hughes R.W. et al. (2000) Burmese Jade: The Inscrutable Gem. *Gems & Gemology*, Vol. 36, No. 1
https://www.gia.edu/gems-gemology/spring-2000-burmese-jade-hughes

Fritsch E. et al. (1992) Identification of Bleached and Polymer-Impregnated Jadeite. *Gems & Gemology*, Vol. 28, No. 3
https://www.gia.edu/gems-gemology/fall-1992-bleaching-jadeite-fritsch

Hobbs J.M. (1982) The Jade Enigma. *Gems & Gemology*, Vol. 18, No. 1
https://www.gia.edu/gems-gemology/spring-1982-jade-enigma-hobbs

Nephrite

Hsu T. (2015) Gem News International: Green Nephrite Jade Attracts Buyers in Tucson. *Gems & Gemology*, Vol. 51, No. 2
https://www.gia.edu/gems-gemology/summer-2015-gemnews-green-nephrite-jade-tucson

Yin Z. et al. (2014) Nephrite Jade from Guangxi Province, China. *Gems & Gemology*, Vol. 50, No. 3
https://www.gia.edu/gems-gemology/fall-2014-nephrite-jade-guangxi-province-china

Adamo I., Bocchio R. (2013) Nephrite Jade from Val Malenco, Italy: Review and Update. *Gems & Gemology*, Vol. 49, No. 2
https://www.gia.edu/gems-gemology/summer-2013-adamo-nephrite-italy

Tourmaline

Nhung N.T. et al. (2017) An Update on Tourmaline from Luc Yen, Vietnam. *Gems & Gemology*, Vol. 53, No. 2
https://www.gia.edu/gems-gemology/summer-2017-tourmaline-luc-yen-vietnam

Peridot

Thuyet N.T.M. et al. (2016) Peridot from the Central Highlands of Vietnam: Properties, Origin, and Formation. *Gems & Gemology*, Vol. 52, No. 3
https://www.gia.edu/gems-gemology/fall-2016-peridot-central-highlands-vietnam-properties-origin-formation

Shen A.H. et al. (2011) Identification of Extraterrestrial Peridot by Trace Elements. *Gems & Gemology*, Vol. 47, No. 3
https://www.gia.edu/gems-gemology/fall-2011-peridot-meteorite-shen

Adamo I. et al. (2009) Characterization of Peridot from Sardinia, Italy. *Gems & Gemology*, Vol. 45, No. 2
https://www.gia.edu/gems-gemology/summer-2009-peridot-sardinia-italy-adamo

Fuhrbach J.R. (1992) Kilbourne Hole Peridot. *Gems & Gemology*, Vol. 28, No. 1
https://www.gia.edu/gems-gemology/spring-1992-kilbourne-hole-peridot-fuhrbach

Sinkankas J. et al. (1992) Peridot as an Interplanetary Gemstone. *Gems & Gemology*, Vol. 28, No. 1
https://www.gia.edu/gems-gemology/spring-1992-interplanetary-peridot-sinkankas

Koivula J.I., Fryer C.W. (1986) The Gemological Characteristics of Chinese Peridot. *Gems & Gemology*, Vol. 22, No. 1
https://www.gia.edu/gems-gemology/spring-1986-china-peridot-koivula

Stockton C.M., Manson D.V. (1983) Peridot from Tanzania. *Gems & Gemology*, Vol. 19, No. 2
https://www.gia.edu/gems-gemology/summer-1983-peridot-tanzania-stockton

Gübelin E. (1981) Zabargad: The Ancient Peridot Island in The Red Sea. *Gems & Gemology*, Vol. 17, No. 1
https://www.gia.edu/gems-gemology/spring-1981-zabargad-peridot-gubelin

Koivula J.I. (1981) San Carlos Peridot. *Gems & Gemology*, Vol. 17, No. 4
https://www.gia.edu/gems-gemology/winter-1981-peridot-san-carlos-koivula

Grossular Garnet (Including Tsavorite)

Mayerson W.M. (2004) Gem News International: Large Tsavorite and Green Grossular from Tanzania. *Gems & Gemology*, Vol. 40, No. 1
https://www.gia.edu/gems-gemology/spring-2004-gem-news-international

Kane R.E. et al. (1990) Well-Formed Tsavorite Gem Crystals from Tanzania. *Gems & Gemology*, Vol. 26, No. 2
https://www.gia.edu/gems-gemology/summer-1990-tsavorite-tanzania-kane

Manson D.V., Stockton C.M. (1982) Gem-Quality Grossular Garnets. *Gems & Gemology*, Vol. 18, No. 4
https://www.gia.edu/gems-gemology/winter-1982-grossular-garnet-manson

Andradite Garnet

Ostrooumov M. (2015) Gem News International: Mexican Demantoid from New Deposits. *Gems & Gemology*, Vol. 51, No. 4
https://www.gia.edu/gems-gemology/winter-2015-gemnews-mexican-demantoid-new-deposits

Pay D. (2015) Gem News International: Large Namibian Demantoid Garnet. *Gems & Gemology*, Vol. 51, No. 2
https://www.gia.edu/gems-gemology/summer-2015-gemnews-large-namibian-demantoid-garnet

Palke A.C., Pardieu V. (2014) Gem News International: Demantoid from Baluchistan Province in Pakistan. *Gems & Gemology*, Vol. 50, No. 4
https://www.gia.edu/gems-gemology/winter-2014-gemnews-demantoid-baluchistan-province-pakistan

Pezzotta F. et al. (2011) Demantoid and Topazolite from Antetezambato, Northern Madagascar: Review and New Data. *Gems & Gemology*, Vol. 47, No. 1
https://www.gia.edu/gems-gemology/spring-2011-demantoid-topazolite-antetezambato-pezzotta

Renfro N. (2010) Gem News International: Andradite from China. *Gems & Gemology*, Vol. 46, No. 1
https://www.gia.edu/gems-gemology/spring-2010-gem-news-international

Adamo I. et al (2009) Demantoid from Val Malenco, Italy: Review and Update. *Gems & Gemology*, Vol. 45, No. 4
https://www.gia.edu/gems-gemology/winter-2009-demantoid-italy-adamo

Danet F. (2009) Gem News International: Demantoid from Ambanja, Madagascar. *Gems & Gemology*, Vol. 45, No. 3
https://www.gia.edu/gems-gemology/fall-2009-gem-news-international

Douman M., Dirlam D. (2004) Gem News International: Update on Demantoid and Cat's-Eye Demantoid from Iran. *Gems & Gemology*, Vol. 40, No. 1
https://www.gia.edu/gems-gemology/spring-2004-gem-news-international

Laurs B.M. (2003) Gem News International: A New Find of Demantoid at a Historic Site in Kladovka, Russia. *Gems & Gemology*, Vol. 39, No. 1
https://www.gia.edu/gems-gemology/spring-2003-gem-news-international

Phillips W.R., Talantsev A.S. (1996) Russian Demantoid, Czar of the Garnet Family. *Gems & Gemology*, Vol. 32, No. 2
https://www.gia.edu/gems-gemology/summer-1996-green-andradite-garnet-phillips

Johnson M.L. et al. (1995) Gem-Quality Grossular-Andradite: A New Garnet from Mali. *Gems & Gemology*, Vol. 31, No. 3
https://www.gia.edu/gems-gemology/fall-1995-garnet-mali-johnson

Stockton C.M., Manson D.V. (1983) Gem Andradite Garnets. *Gems & Gemology*, Vol. 19, No. 4
https://www.gia.edu/gems-gemology/winter-1983-garnet-stockton

Payne T. (1981) The Andradites of San Benito County, California. *Gems & Gemology*, Vol. 17, No. 3
https://www.gia.edu/gems-gemology/fall-1981-andradites-payne

Green-to-Yellow Chrysoberyl

Mayerson W.M. (2004) Lab Notes: Notable Cat's-Eye Alexandrite. *Gems & Gemology*, Vol. 40, No. 2
https://www.gia.edu/gems-gemology/summer-2004-lab-notes

Schmetzer K. et al. (2002) Gem News International: Yellowish Green and Green Chrysoberyl from Ilakaka, Madagascar. *Gems & Gemology*, Vol. 38, No. 3
https://www.gia.edu/gems-gemology/fall-2002-gem-news-international

Andalusite

Fernandes S., Choudhary G. (2009) Gem-Quality Andalusite from Brazil. *Gems & Gemology*, Vol. 45, No. 2
https://www.gia.edu/gems-gemology/summer-2009-andalusite-brazil-fernandes

Green Zoisite

Barot N.R., Boehm E.W. (1992) Gem-Quality Green Zoisite. *Gems & Gemology*, Vol. 28, No. 1
https://www.gia.edu/gems-gemology/spring-1981-green-zoisite-barot

Chrysoberyl (Including Alexandrite)

Mayerson W.M. (2004) Lab Notes: Notable Cat's-Eye Alexandrite. *Gems & Gemology*, Vol. 40, No. 2
https://www.gia.edu/gems-gemology/summer-2004-lab-notes

Schmetzer K. et al. (2002) Gem News International: Yellowish Green and Green Chrysoberyl from Ilakaka, Madagascar. *Gems & Gemology*, Vol. 38, No. 3
https://www.gia.edu/gems-gemology/fall-2002-gem-news-international

Proctor K. (1988) Chrysoberyl and Alexandrite from the Pegmatite Districts of Minas Gerais, Brazil. *Gems & Gemology*, Vol. 24, No. 1
https://www.gia.edu/gems-gemology/spring-1988-pegmatites-brazil-proctor

Green Spodumene

Chadwick K.M. et al. (2007) Gem News International: Cr/V-Bearing Green Spodumene from Afghanistan. *Gems & Gemology*, Vol. 43, No. 3
https://www.gia.edu/gems-gemology/fall-2007-gem-news-international

Laurs B.M. et al. (2003) Gem News International: New Hiddenite Discovery in Historic North Carolina Location. *Gems & Gemology*, Vol. 39, No. 3
https://www.gia.edu/gems-gemology/fall-2003-gem-news-international

Diopside

Cevallos P. (2010) Gem News International: Diopside from Pakistan. *Gems & Gemology*, Vol. 46, No. 4
https://www.gia.edu/gems-gemology/winter-2010-gem-news-international

Befi R. (2010) Gem News International: Diopside from Ihosy, Madagascar. *Gems & Gemology*, Vol. 46, No. 1
https://www.gia.edu/gems-gemology/spring-2010-gem-news-international

Merk R. (2006) Gem News International: Diopside from Afghanistan. *Gems & Gemology*, Vol. 42, No. 4
https://www.gia.edu/gems-gemology/winter-2006-gem-news-international

Shor R., Quinn E. (2002) Gem News International: "Tashmarine": Diopside from Central Asia. *Gems & Gemology*, Vol. 38, No. 3
https://www.gia.edu/gems-gemology/fall-2002-gem-news-international

Chalcedony (Including Chrysoprase)

Renfro N. (2015) Gem News International: A New Natural-Color Bluish Green Chalcedony. *Gems & Gemology*, Vol. 51, No. 4
https://www.gia.edu/gems-gemology/winter-2015-gemnews-new-natural-color-bluish-green-chalcedony

Shigley J.E. et al. (2009) Chrysoprase and Prase Opal from Haneti, Central Tanzania. *Gems & Gemology*, Vol. 45, No. 4
https://www.gia.edu/gems-gemology/winter-2009-chrysoprase-prase-opal-shigley

Green Feldspar

Chadwick K.M. et al. (2008) Gem News International: Green Sodic Plagioclase from East Africa. *Gems & Gemology*, Vol. 44, No. 1
https://www.gia.edu/gems-gemology/spring-2008-gem-news-international

Laurs B.M. et al. (2005) Gem News International: Green Orthoclase Feldspar from Vietnam. *Gems & Gemology*, Vol. 41, No. 4
https://www.gia.edu/gems-gemology/winter-2005-gem-news-international

Variscite

Litvinenko A.K. et al. (2016) Variscite from Central Tajikistan: Preliminary Results. *Gems & Gemology*, Vol. 52, No. 1
https://www.gia.edu/gems-gemology/spring-2016-variscite-central-tajikistan-preliminary-results

Serpentine

Adamo I. et al. (2016) Gem-Quality Serpentine from Val Malenco, Central Alps, Italy. *Gems & Gemology*, Vol. 52, No. 1
https://www.gia.edu/gems-gemology/spring-2016-gem-quality-serpentine-val-malenco-central-alps-italy

Maw-Sit-Sit

Hurwit K.N. (2001) Lab Notes: Maw-Sit-Sit Beads. *Gems & Gemology*, Vol. 37, No. 3
https://www.gia.edu/gems-gemology/fall-2001-lab-notes

Gem News International: Maw-Sit-Sit from Myanmar (1998) *Gems & Gemology*, Vol. 34, No. 1
https://www.gia.edu/gems-gemology/spring-1998-gem-news-international

Assignment 16: Separating Orange, Yellow, and Brown Gems

Diamond

Kennedy L., Johnson P. (2016) Lab Notes: Yellow Synthetic Diamond with Nickel-Related Green Fluorescence. *Gems & Gemology*, Vol. 52, No. 2
https://www.gia.edu/gems-gemology/summer-2016-labnotes-yellow-synthetic-diamond-nickel-related-green-fluorescence

Chan S. (2015) Lab Notes: Yellow HPHT-Processed Rough Diamond. *Gems & Gemology*, Vol. 51, No. 3
https://www.gia.edu/gems-gemology/fall-2015-labnotes-yellow-hpht-processed-rough-diamond

Wang W. (2014) Lab Notes: Very Large Irradiated Yellow Diamond. *Gems & Gemology*, Vol. 50, No. 4
https://www.gia.edu/gems-gemology/winter-2014-labnotes-irradiated-yellow-diamond

Moe K.S. et al. (2014) Lab Notes: Yellow CVD Synthetic Diamond. *Gems & Gemology*, Vol. 50, No. 2
https://www.gia.edu/gems-gemology/summer-2014-labnotes-yellow-cvd-synthetic-diamond

King J.M. et al. (2005) Characterization and Grading of Natural-Color Yellow Diamonds. *Gems & Gemology*, Vol. 41, No. 2
https://www.gia.edu/gems-gemology/summer-2005-grading-natural-yellow-diamonds-king

Reinitz I.M. et al. (2000) Identification of HPHT-Treated Yellow to Green Diamonds. *Gems & Gemology*, Vol. 36, No. 2
https://www.gia.edu/gems-gemology/summer-2000-hpht-treated-yellow-green-diamonds-reinitz

Shigley J.E. et al. (1993) The Gemological Properties of Russian Gem-Quality Synthetic Yellow Diamonds. *Gems & Gemology*, Vol. 29, No. 4
https://www.gia.edu/gems-gemology/winter-1993-russia-synthetic-diamond-shigley

Shigley J.E. et al. (1992) An Update on Sumitomo Gem-Quality Synthetic Diamonds. *Gems & Gemology*, Vol. 28, No. 2
https://www.gia.edu/gems-gemology/summer-1992-sumitomo-synthetic-diamond-shigley

Topaz

Cairncross B. et al (1998) Topaz, Aquamarine, and Other Beryls from Klein Spitzkoppe, Namibia. *Gems & Gemology*, Vol. 34, No. 2
https://www.gia.edu/gems-gemology/summer-1998-beryls-klein-spitzkoppe-namibia-cairncross

Sauer D.A. et al. (1996) An Update on Imperial Topaz from the Capão Mine, Minas Gerais. *Gems & Gemology*, Vol. 32, No. 4
https://www.gia.edu/gems-gemology/winter-1996-imperial-topaz-brazil-sauer

Keller P.C. (1983) The Capão Topaz Deposit, Ouro Preto, Minas Gerais, Brazil. *Gems & Gemology*, Vol. 19, No. 1
https://www.gia.edu/gems-gemology/spring-1983-topaz-brazil-keller

Beryl

Laurs B.M., Fritz E. (2007) Gem News International: Heliodor and Other Beryls from Connecticut. *Gems & Gemology*, Vol. 43, No. 2
https://www.gia.edu/gems-gemology/summer-2007-gem-news-international

Spessartine Garnet

Chadwick K.M. (2008) Gem News International: Spessartine from Loliondo, Tanzania. *Gems & Gemology*, Vol. 44, No. 1
https://www.gia.edu/gems-gemology/spring-2008-gem-news-international

Laurs B.M., Knox K. (2001) Spessartine Garnet from Ramona, San Diego County, California. *Gems & Gemology*, Vol. 37, No. 4
https://www.gia.edu/gems-gemology/winter-2001-spessartine-garnet-california-laurs

"Malaya" Garnet

Schmetzer K. et al. (2001) Pink to Pinkish Orange Malaya Garnets from Bekily, Madagascar. *Gems & Gemology*, Vol. 37, No. 4
https://www.gia.edu/gems-gemology/winter-2001-pink-orange-malaya-garnets-madagascar-schmetzer

Chrysoberyl

Schmetzer K. et al. (2016) Chrysoberyl from the New England Placer Deposits, New South Wales, Australia. *Gems & Gemology*, Vol. 52, No. 1
https://www.gia.edu/gems-gemology/spring-2016-chrysoberyl-recovered-sapphires-related-tertiary-volcanics-england-placer-deposits-south-wales-australia

Schmetzer K. et al. (2002) Gem News International: Yellowish Green and Green Chrysoberyl from Ilakaka, Madagascar. *Gems & Gemology*, Vol. 38, No. 3
https://www.gia.edu/gems-gemology/fall-2002-gem-news-international

Andalusite

Fernandes S., Choudhary G. (2009) Gem-Quality Andalusite from Brazil. *Gems & Gemology*, Vol. 45, No. 2
https://www.gia.edu/gems-gemology/summer-2009-andalusite-brazil-fernandes

Danburite

Huong L. et al. (2016) A New Find of Danburite in the Luc Yen Mining Area, Vietnam. *Gems & Gemology*, Vol. 52, No. 4
https://www.gia.edu/gems-gemology/winter-2016-danburite-luc-yen-mining-area-vietnam

Feldspar

Hänni H. et al. (2003) Gem News International: Star Sunstone from Tanzania. *Gems & Gemology*, Vol. 39, No. 3
https://www.gia.edu/gems-gemology/fall-2003-gem-news-international

Gem News International: Sunstone Feldspar from Tanzania (2002) *Gems & Gemology*, Vol. 38, No. 2
https://www.gia.edu/gems-gemology/summer-2002-gem-news-international

Citrine Quartz

Beaton D. (2012) Gem News International: Citrine from Zambia. *Gems & Gemology*, Vol. 48, No. 3
https://www.gia.edu/gems-gemology/citrine-from-zambia

Pearl

Elen S. (2002) Identification of Yellow Cultured Pearls from the Black-Lipped Oyster Pinctada Margaritifera. *Gems & Gemology*, Vol. 38, No. 1
https://www.gia.edu/gems-gemology/spring-2002-yellow-cultured-pearls-pinctada-margaritifera-elen

Elen S. (2001) Spectral Reflectance and Fluorescence Characteristics of Natural-Color and Heat-Treated "Golden" South Sea Cultured Pearls. *Gems & Gemology*, Vol. 37, No. 2
https://www.gia.edu/gems-gemology/summer-2001-heat-treated-golden-south-sea-cultured-pearls-elen

For Further Reading

Gems & Gemology (G&G), GIA's professional journal, provides in-depth feature articles on the latest gemological research, from gem treatments, synthetics, and the evaluation of gem quality to developments in gem production, market sources, and more.

To give you the opportunity to learn more about the subjects you are studying and enrich your gemological knowledge, a list of *G&G* articles relevant to each *Gem Identification* assignment is provided below. It is important to note that this reading is optional. You will not be tested on the content of these articles.

All *G&G* articles are available for download free of charge on GIA's website, www.gia.edu. Copies of these articles are also available at your GIA campus location. Check with your instructor for access to them.

Scan the QR code above or go to https://www.gia.edu/library to access articles for further reading.

Assignment 17: Separating Colorless, White, Gray, and Black Gems

Diamond

Shigley J.E. (2016) Synthetics: Identifying Lab-Grown Diamonds. *Research News*
https://www.gia.edu/identifying-lab-grown-diamonds

HPHT Synthetic Diamond

Wang W., Moses T. (2016) Gem News International: Large Colorless HPHT Synthetic Gem Diamonds from China. *Gems & Gemology*, Vol. 52, No. 1
https://www.gia.edu/gems-gemology/spring-2016-gemnews-large-colorless-hpht-synthetic-gem-diamonds-china

D'Haenens-Johansson U.F.S. et al. (2015) Large Colorless HPHT Synthetic Diamonds from New Diamond Technology. *Gems & Gemology*, Vol. 51, No. 3
https://www.gia.edu/gems-gemology/fall-2015-large-colorless-hpht-grown-synthetic-gem-diamond-technology-russia

Poon P.Y. et al. (2015) Large HPHT-Grown Synthetic Diamonds Examined in GIA's Hong Kong Laboratory. GIA Research & News
https://www.gia.edu/gia-news-research-large-hpht-grown-synthetic-diamonds-examined-in-gia-hong-kong-laboratory

D'Haenens-Johansson U.F.S. et al. (2014) Near-Colorless HPHT Synthetic Diamonds from AOTC Group. *Gems & Gemology*, Vol. 50, No. 1
https://www.gia.edu/gems-gemology/spring-2014-ulrika-hpht-synthetic-diamonds

Shigley J.E. et al. (2004) An Updated Chart on the Characteristics of HPHT-Grown Synthetic Diamonds. *Gems & Gemology*, Vol. 40, No. 4
https://www.gia.edu/gems-gemology/winter-2004-characteristics-hpht-grown-synthetic-diamonds-shigley

Shigley J.E. et al. (1997) Gemological Properties of Near-Colorless Synthetic Diamonds. *Gems & Gemology*, Vol. 33, No. 1
https://www.gia.edu/gems-gemology/spring-1997-synthetic-diamond-properties-shigley

Rooney M.T. et al. (1993) De Beers Near Colorless-to-Blue Experimental Gem-Quality Synthetic Diamonds. *Gems & Gemology*, Vol. 29, No. 1
https://www.gia.edu/gems-gemology/spring-1993-debeers-synthetic-diamond-rooney

CVD Synthetic Diamond

Ardon T., Eaton-Magaña S. (2014) Lab Notes: Two Fancy Dark Gray CVD Synthetic Diamonds. *Gems & Gemology*, Vol. 50, No. 3
https://www.gia.edu/gems-gemology/fall-2014-labnotes-two-fancy-fark-gray-cvd-synthetic-diamonds

Eaton-Magaña S., D'Haenens-Johansson U.F.S. (2012) Recent Advances in CVD Synthetic Diamond Quality. *Gems & Gemology*, Vol. 48, No. 2
https://www.gia.edu/gems-gemology/summer-2012-recent-advances-cvd-quality-eaton-magana

Wang W. et al. (2007) Latest-Generation CVD-Grown Synthetic Diamonds from Apollo Diamond Inc. *Gems & Gemology*, Vol. 43, No. 4https://www.gia.edu/gems-gemology/winter-2007-cvd-grown-synthetic-diamonds-wang

Wang W. et al. (2005) Experimental CVD Synthetic Diamonds from LIMHP-CNRS, France. *Gems & Gemology*, Vol. 41, No. 3
https://www.gia.edu/gems-gemology/fall-2005-cvd-synthetic-diamond-france-wang

Martineau P.M. et al (2004) Identification of Synthetic Diamond Grown Using Chemical Vapor Deposition (CVD). *Gems & Gemology*, Vol. 40, No. 1
https://www.gia.edu/gems-gemology/spring-2004-identification-cvd-synthetic-diamond-martineau

Wang W. et al. (2003) Gem-Quality Synthetic Diamonds Grown by a Chemical Vapor Deposition (CVD) Method. *Gems & Gemology*, Vol. 39, No 4
https://www.gia.edu/gems-gemology/winter-2003-synthetic-diamonds-chemical-vapor-deposition-wang

Pearl

Sturman N. et al. (2016) Bead-Cultured and Non-Bead-Cultured Pearls from Lombok, Indonesia. *Gems & Gemology*, Vol. 52, No. 3
https://www.gia.edu/gems-gemology/fall-2016-bead-cultured-pearls-lombok-indonesia

Zhou Y., Zhou C. (2015) Lab Notes: Strong Pinkish Purple Freshwater Bead-Cultured Pearls. *Gems & Gemology*, Vol. 51, No. 2
https://www.gia.edu/gems-gemology/summer-2015-labnotes-pinkish-purple-freshwater-bead-cultured-pearls

Sturman N., Strack E. (2010) Gem News International: "Soufflé" Freshwater Cultured Pearls. *Gems & Gemology*, Vol. 46, No. 1
https://www.gia.edu/gems-gemology/spring-2010-gem-news-international

Elen S. (2002) Identification of Yellow Cultured Pearls from the Black-Lipped Oyster Pinctada Margaritifera. *Gems & Gemology*, Vol. 38, No. 1
https://www.gia.edu/gems-gemology/spring-2002-yellow-cultured-pearls-pinctada-margaritifera-elen

Hanano J. et al. (1990) Majorica Imitation Pearls. *Gems & Gemology*, Vol. 26, No. 3
https://www.gia.edu/gems-gemology/fall-1990-imitation-pearls-hanano

Opal

Kiefert L. et al. (2014) Gem News International: New Deposit of Black Opal from Ethiopia. *Gems & Gemology*, Vol. 50, No. 4
https://www.gia.edu/gems-gemology/winter-2014-gemnews-new-deposit-black-opal-from-ethiopia

Rondeau B. et al. (2013) On the Origin of Digit Patterns in Gem Opal. *Gems & Gemology*, Vol. 49, No. 3
https://www.gia.edu/gems-gemology/FA13-opal-digit-patterns-rondeau

Rondeau B. et al. (2010) Play-of-Color Opal from Wegel Tena, Wollo Province, Ethiopia. *Gems & Gemology*, Vol. 46, No. 2
https://www.gia.edu/gems-gemology/summer-2010-opal-ethiopia-rondeau

Rondeau B. et al. (2009) Gem News International: New Play-of-Color Opal from Welo, Ethiopia. *Gems & Gemology*, Vol. 45, No. 1
https://www.gia.edu/gems-gemology/spring-2009-gem-news-international

Johnson M.L. et al. (1996) Opal from the Shewa Province, Ethiopia. *Gems & Gemology*, Vol. 32, No. 2
https://www.gia.edu/gems-gemology/summer-1996-shewa-province-opal-johnson

Wise R.W. (1993) Queensland Boulder Opal. *Gems & Gemology*, Vol. 29, No. 1
https://www.gia.edu/gems-gemology/spring-1993-queensland-boulder-opal-wise

Smith K.L. (1988) Opals from Opal Butte, Oregon. *Gems & Gemology*, Vol. 24, No. 4
https://www.gia.edu/gems-gemology/winter-1988-oregon-opals-smith

Koivula J.I. et al. (1983) Opal from Queretaro, Mexico: Occurrence and Inclusions. *Gems & Gemology*, Vol. 19, No. 2
https://www.gia.edu/gems-gemology/summer-1983-opal-queretaro-koivula

Feldspar

Rockwell K., Breeding C.M. (2006) Gem News International: Labradorite from Chihuahua, Mexico. *Gems & Gemology*, Vol. 42, No. 4
https://www.gia.edu/gems-gemology/winter-2006-gem-news-international

Quinn E.P. et al. (2005) Gem News International: Albitic "Moonstone" from the Morogoro Region, Tanzania. *Gems & Gemology*, Vol. 41, No. 1
https://www.gia.edu/gems-gemology/spring-2005-gem-news-international

Gem News International: Blue- and Multicolor-Sheen Moonstone Feldspar from India (1997) *Gems & Gemology*, Vol. 33, No. 2
https://www.gia.edu/gems-gemology/summer-1997-gem-news-international

Chalcedony

Dumanska-Słowik M. et al. (2013) Agates from Morocco: Gemological Characteristics and Proposed Origin. *Gems & Gemology*, Vol. 49, No. 3
https://www.gia.edu/gems-gemology/FA13-dumanska-agate-sidi-rahal

Diamond Simulants

Song Y. et al. (2016) Gem News International: Synthetic Moissanite Imitations of Synthetic Colored Diamonds. *Gems & Gemology*, Vol. 52, No. 2
https://www.gia.edu/gems-gemology/summer-2016-gemnews-synthetic-moissanite-imitations-synthetic-colored-diamonds

Zhou J.Y. (2015) Lab Notes: Synthetic Moissanite Melee in a Colored Diamond Bracelet. *Gems & Gemology*, Vol. 51, No. 1
https://www.gia.edu/gems-gemology/spring-2015-labnotes-synthetic-moissanite-melee-colored-diamond

Choudhary G. (2013) Gem News International: Boron Carbide: A New Imitation of Black Diamond. *Gems & Gemology*, Vol. 49, No. 3
https://www.gia.edu/gems-gemology/fa13-gni-boron-carbide-diamond-imitation

Shigley J.E. et al. (2012) Characterization of Colorless Coated Cubic Zirconia (Diamantine). *Gems & Gemology*, Vol. 48, No. 1
https://www.gia.edu/gems-gemology/spring-2012-zirconia-diamantine-shigley

Nassau K. et al. (1997) Synthetic Moissanite: A New Diamond Substitute. *Gems & Gemology*, Vol. 33, No. 4
https://www.gia.edu/gems-gemology/winter-1997-synthetic-moissanite-nassau

Kammerling K.C. et al. (1991) An Examination of Nontransparent "CZ" from Russia. *Gems & Gemology*, Vol. 27, No. 4
https://www.gia.edu/gems-gemology/winter-1991-cz-russia-kammerling

Hobbs J. (1981) A Simple Approach to Detecting Diamond Simulants. *Gems & Gemology*, Vol 17, No. 1
https://www.gia.edu/gems-gemology/spring-1981-diamond-simulants-hobbs

Nassau K. (1981) Cubic Zirconia: An Update. *Gems & Gemology*, Vol. 17, No. 1
https://www.gia.edu/gems-gemology/spring-1981-cubic-zirconia-nassau

Nassau K. (1978) Distinguishing Diamond from Cubic Zirconia. *Gems & Gemology*, Vol. 16, No. 4
https://www.gia.edu/doc/winter_1978.pdf

Liddicoat R.T., Koivula J.I. (1978) Synthetic Cubic Stabilized Zirconia. *Gems & Gemology*, Vol. 16, No. 2
https://www.gia.edu/doc/summer_1978.pdf

Benson L.B. (1957) Diamond Substitutes. *Gems & Gemology*, Vol. 9, No. 2
https://www.gia.edu/doc/summer_1957.pdf

Assignment 18: Identifying Rough Gems, Parcels, and Mounted Gems

Costa E., Navone R. (2016) Gem News International: Imitation Rubellite Boulders. *Gems & Gemology*, Vol. 52, No. 4
https://www.gia.edu/gems-gemology/winter-2016-gemnews-imitation-rubellite-boulders

Sehgal A., Befi R. (2015) Lab Notes: Polished Freeform Topaz Imitating Diamond Rough. *Gems & Gemology*, Vol. 51, No. 3
https://www.gia.edu/gems-gemology/fall-2015-labnotes-polished-freeform-topaz-imitating-diamond-rough

Chauhan M. (2014) Gem News International: Unusual Composite Ruby Rough. *Gems & Gemology*, Vol. 50, No. 4
https://www.gia.edu/gems-gemology/winter-2014-gemnews-unusual-composite-ruby-rough

Gem News International: Emerald Rough: Buyer Beware! (1997) *Gems & Gemology*, Vol. 33, No. 2
https://www.gia.edu/gems-gemology/summer-1997-gem-news-international

Assignment 19: Advanced Laboratory Testing

General

Breeding C.M. et al. (2010) Developments in Gemstone Analysis Techniques and Instrumentation During the 2000s. *Gems & Gemology*, Vol. 46, No. 3
https://www.gia.edu/gems-gemology/fall-2010-analysis-techniques-breeding

Photoluminescence (PL) Spectroscopy

Eaton-Magaña S., Breeding C.M. (2016) An Introduction to Photoluminescence Spectroscopy for Diamond and Its Applications in Gemology. *Gems & Gemology*, Vol. 52, No. 1
https://www.gia.edu/gems-gemology/spring-2016-photoluminescence-spectroscopy-diamond-applications-gemology

Raman Spectroscopy

Huong L. et al. (2010) Confocal Micro-Raman Spectroscopy: A Powerful Tool to Identify Natural and Synthetic Emeralds. *Gems & Gemology*, Vol. 46, No. 1
https://www.gia.edu/gems-gemology/spring-2010-emeralds-spectroscopy-huong

McClure S.F. et al. (2010) Gemstone Enhancement and Its Detection in the 2000s. *Gems & Gemology*, Vol. 46, No. 3
https://www.gia.edu/gems-gemology/fall-2010-detection-disclosure-heating-mcclure

Karampelas S. et al. (2009) Identification of the Endangered Pink-To-Red Stylaster Corals by Raman Spectroscopy. *Gems & Gemology*, Vol. 45, No. 1
https://www.gia.edu/gems-gemology/spring-2009-stylaster-corals-karampeles

McClure S.F., Smith C.P. (2000) Gemstone Enhancements and Detection in the 1990s. *Gems & Gemology*, Vol. 36, No. 4
https://www.gia.edu/gems-gemology/winter-2000-gemstone-enhancements-detection-1990s-mcclure

Krzemnicki M.S. (1999) Diopside Needles as Inclusions in Demantoid Garnet from Russia: A Raman Microspectrometric Study. *Gems & Gemology*, Vol. 35, No. 4
https://www.gia.edu/gems-gemology/winter-1999-inclusions-demantoid-garnet-russia-krzemnicki

Hänni H. et al. (1998) Raman Investigations on Two Historical Objects from Basel Cathedral: The Reliquary Cross and Dorothy Monstrance. *Gems & Gemology*, Vol. 34, No. 2
https://www.gia.edu/gems-gemology/summer-1998-investigations-historical-objects-basel-cathedral-hanni

Welbourn C.M. et al. (1996) De Beers Natural versus Synthetic Diamond Verification Instruments. *Gems & Gemology*, Vol. 32, No. 3
https://www.gia.edu/gems-gemology/fall-1996-debeers-diamond-tools-welbourn

Infrared Spectroscopy

Karampelas S. et al. (2011) Infrared Spectroscopy of Natural vs. Synthetic Amethyst: An Update. *Gems & Gemology*, Vol. 47, No. 3
https://www.gia.edu/gems-gemology/fall-2011-amethyst-crystals-karampelas

Stockton C.M. (1987) The Separation of Natural from Synthetic Emeralds by Infrared Spectroscopy. *Gems & Gemology*, Vol. 23, No. 2
https://www.gia.edu/gems-gemology/summer-1987-emerald-spectroscopy-stockton

Trace Element Chemistry

Breeding C.M., Shen A. (2010) LA-ICP-MS Analysis as a Tool for Separating Natural and Synthetic Malachite. *Research News*
https://www.gia.edu/gia-news-research-nr101410

Breeding C.M. (2009) Using LA-ICP-MS Analysis for the Separation of Natural and Synthetic Amethyst and Citrine. GIA Research & News
https://www.gia.edu/ongoing-research/la-icp-ms-analysis-of-natural-and-synthetic-quartz

Muhlmeister S. et al. (1998) Separating Natural and Synthetic Rubies on the Basis of Trace-Element Chemistry. *Gems & Gemology*, Vol. 34, No. 2
https://www.gia.edu/gems-gemology/summer-1998-separating-natural-synthetic-rubies-mulhmeister

Other

Karampelas S. et al. (2011) UV-Vis-NIR Reflectance Spectroscopy of Natural-Color Saltwater Cultured Pearls from Pinctada Margaritifera. *Gems & Gemology*, Vol. 47, No. 1
https://www.gia.edu/gems-gemology/spring-2011-saltwater-pearls-karampelas

Karampelas S. et al. (2010) X-ray Computed Microtomography Applied to Pearls: Methodology, Advantages, and Limitations. *Gems & Gemology*, Vol. 46, No. 2
https://www.gia.edu/gems-gemology/summer-2010-pearls-microtomography-karampelas

Krzemnicki M.S. et al. (2010) X-ray Computed Microtomography: Distinguishing Natural Pearls from Beaded and Non-Beaded Cultured Pearls. *Gems & Gemology*, Vol. 46, No. 2
https://www.gia.edu/gems-gemology/summer-2010-pearls-microtomography-krzemnicki