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Species - Variety:

**Corundum - Sapphire**

Locality:

**India, Kashmir**

*Description*

Shape: Cushion

Weight: 4.64 ct

Dimensions: 9.29 x 9.25 x 5.38 mm

Diaphaneity: Transparent

Color: Dark, moderately strong, violetish Blue

*Gemological Properties*

Optical Character: Uniaxial negative

Refractive Index: 1.761 / 1.769

Birefringence: 0.008

Specific Gravity: 3.99

Pleochroism: Purplish blue / Greenish blue

Luster: Vitreous

Phenomenon: None

Fluorescence:

LWUV: Weak red with even distribution

SWUV: Weak green with uneven distribution

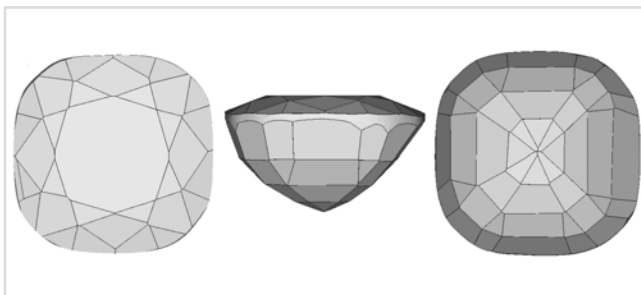
Phosphorescence:

LWUV: None

SWUV: None

Absorption Spectrum:

Broad absorption between 550-600 nm and above 640 nm; line at 455 nm

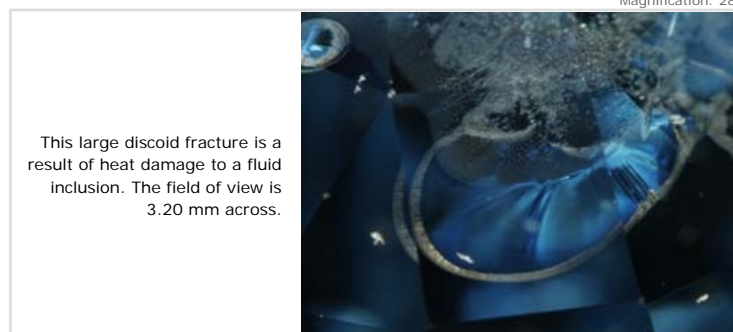


Facet Diagram: top | side | bottom

*Photomicrograph*

This blue sapphire exhibits evidence of heat treatment, to include several reflective mirror-like discoid fractures as well as melted inclusions. There are numerous dark needle-like inclusions. It also displays blue/colorless banding in two intersecting parallel sets.

Magnification: 28x



This large discoid fracture is a result of heat damage to a fluid inclusion. The field of view is 3.20 mm across.

© GIA. Photomicrograph by John Koivula.

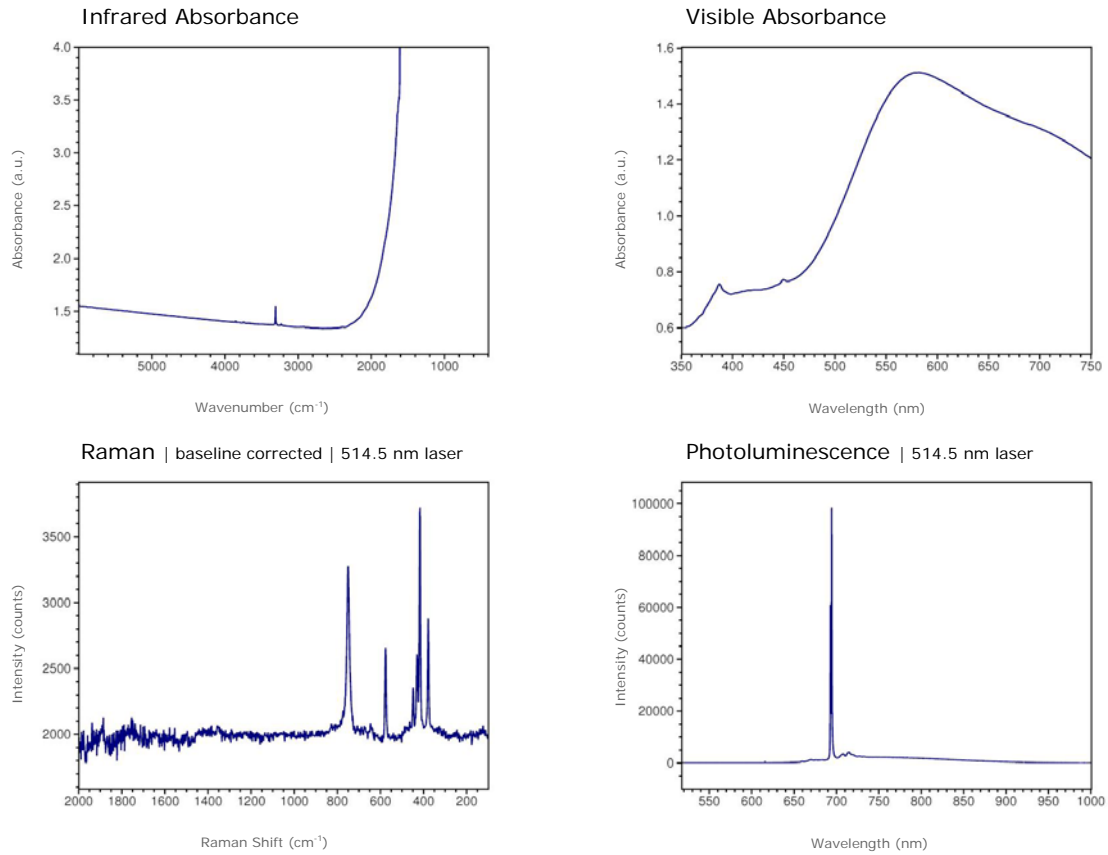
GIA Gem Database | Edward J. Gübelin Collection

Corundum - Sapphire | India, Kashmir  
GIA Collection Number: 33064

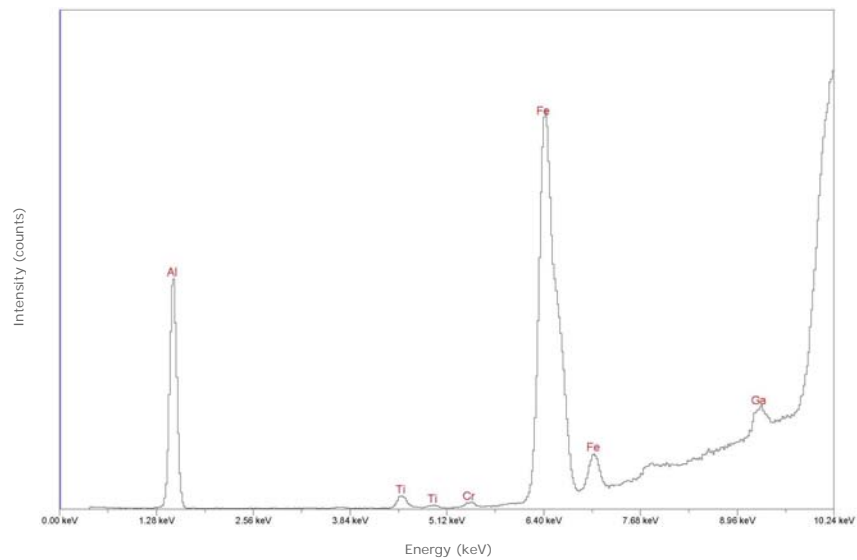


© GIA. Photo by Robert Weldon.

Spectrum



Chemistry | EDXRF





© GIA. Photo by Robert Weldon.

Species - Variety:

**Corundum - Ruby**

Locality:

**Myanmar, Mandalay, Mogok**

*Description*

Shape: Oval

Weight: 1.65 ct

Dimensions: 7.75 x 6.92 x 3.66 mm

Diaphaneity: Transparent

Color: Medium dark, strong, slightly purplish Red

*Gemological Properties*

Optical Character: Uniaxial negative

Refractive Index: 1.760 / 1.769

Birefringence: 0.009

Specific Gravity: 3.99

Pleochroism: Purplish red / Reddish brown

Luster: Vitreous

Phenomenon: None

Fluorescence:

LWUV: Strong red with even distribution

SWUV: Weak red with even distribution

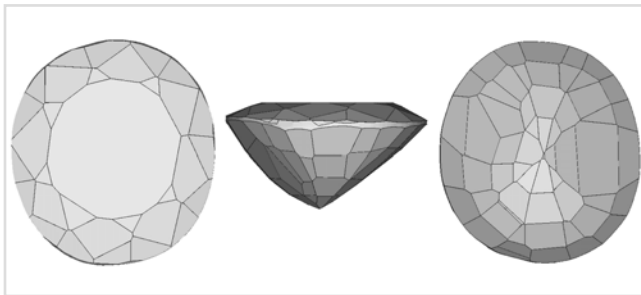
Phosphorescence:

LWUV: None

SWUV: None

Absorption Spectrum:

Broad absorption below 450 nm and between about 520-580 nm; lines at about 468, 476, 660, 675 and 693 nm (doublet)



Facet Diagram: top | side | bottom

*Photomicrograph*

A prominent cloud of iridescent exsolution needles is readily visible beneath the crown facets of this ruby. The cloud forms four of six sides of a hexagonal growth shape. There are several large fractures, one of which is stained orange. Roiled growth and color zoning are also visible. There is no evidence that this ruby has been heat treated.

Magnification: 57x

Iridescent intersecting needle-like rutile inclusions form a prominent exsolution cloud. The field of view is 1.50 mm across.



© GIA. Photomicrograph by John Koivula.

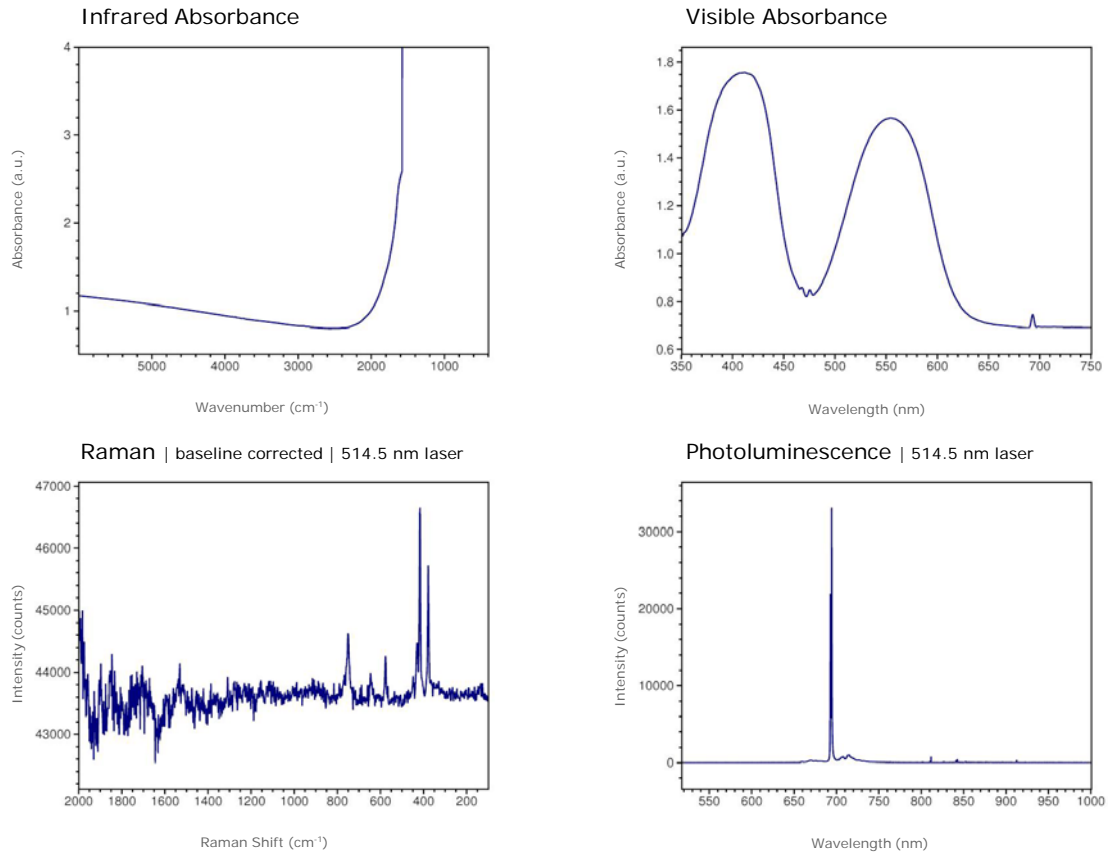
GIA Gem Database | Edward J. Gübelin Collection

Corundum - Ruby | Myanmar, Mandalay  
GIA Collection Number: 33067

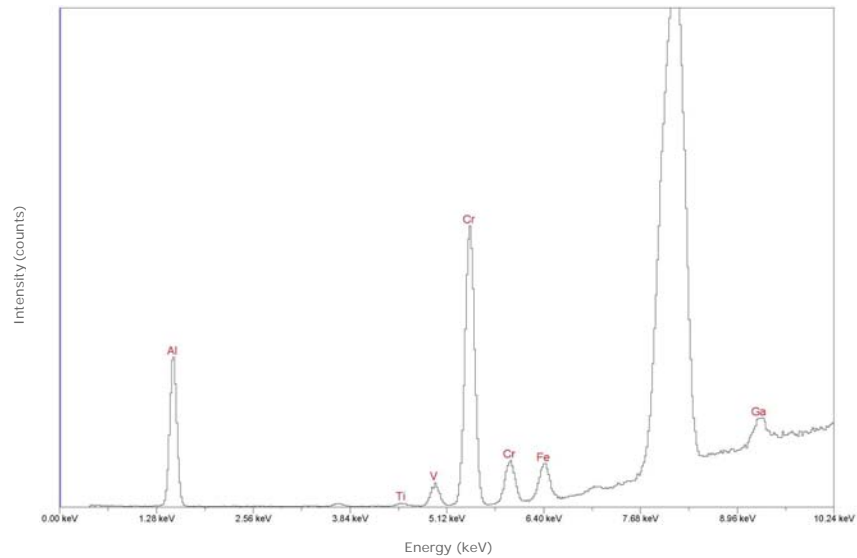


© GIA. Photo by Robert Weldon.

Spectrum



Chemistry | EDXRF





© GIA. Photo by Robert Weldon.

Species - Variety:

**Corundum - Sapphire**

Locality:

**Sri Lanka**

### Description

Shape: Cushion

Weight: 6.66 ct

Dimensions: 8.88 x 8.87 x 7.96 mm

Diaphaneity: Transparent

Color: Light, strong, orangy Red

### Gemological Properties

Optical Character: Uniaxial negative

Refractive Index: 1.760 / 1.768

Birefringence: 0.008

Specific Gravity: 4.00

Pleochroism: Pink / Light brown

Luster: Vitreous

Phenomenon: None

Fluorescence:

LWUV: Strong orangy-red with even distribution

SWUV: Weak orangy-red with even distribution

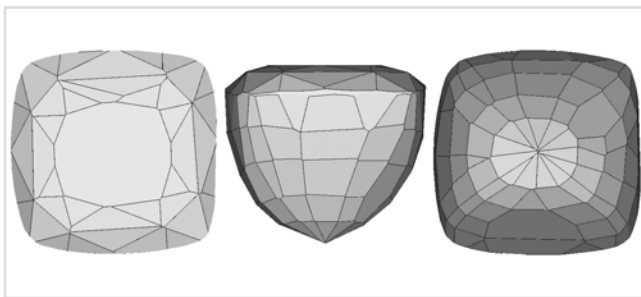
Phosphorescence:

LWUV: None

SWUV: Persistent red

Absorption Spectrum:

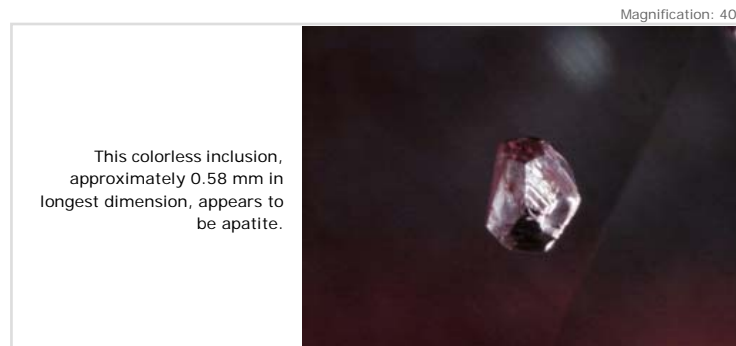
Broad absorption below 430 nm and between 540-570 nm; lines at 693 nm (doublet)



Facet Diagram: top | side | bottom

### Photomicrograph

This sapphire displays a hazy appearance due to diffuse cloud-like inclusions. There are several small intact primary fluid inclusions which each contain a bubble of carbon dioxide gas. There is also a birefringent solid phase (probably diaspore), and several transparent inclusions (probably apatite).



© GIA. Photomicrograph by John Koivula.

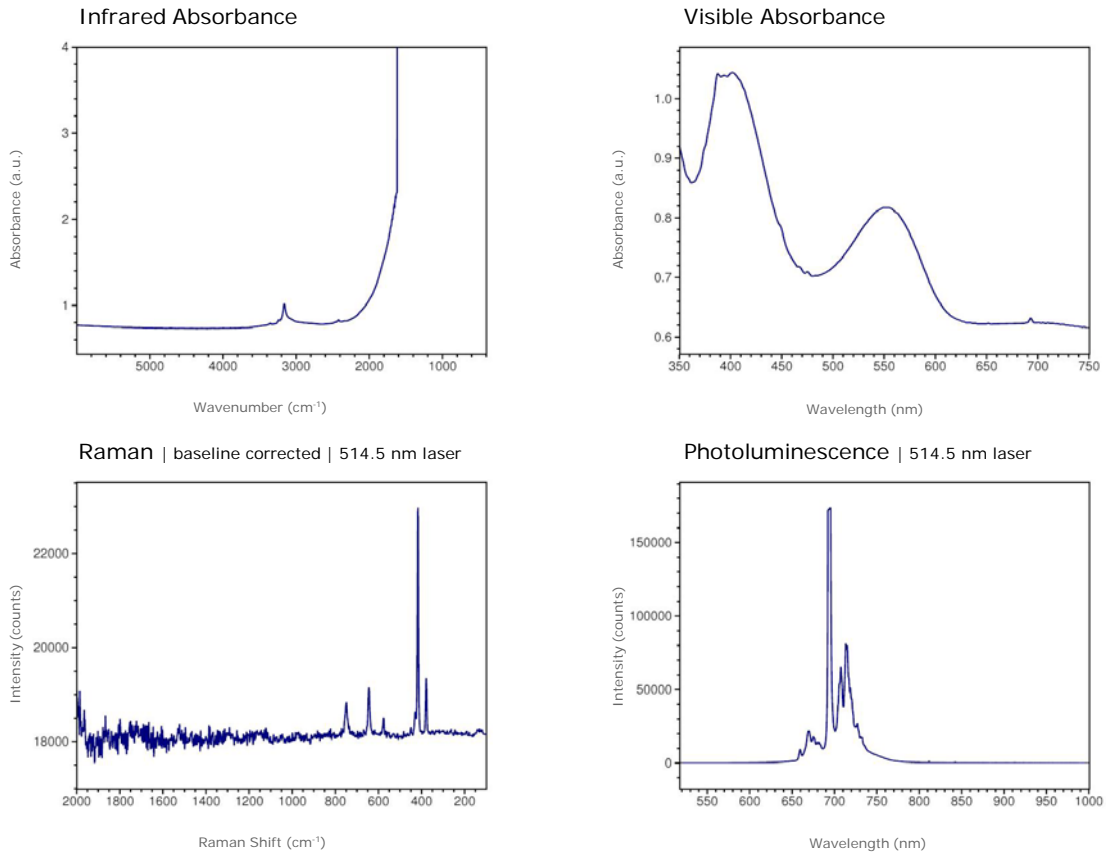
GIA Gem Database | Edward J. Gübelin Collection

Corundum - Sapphire | Sri Lanka  
GIA Collection Number: 33073

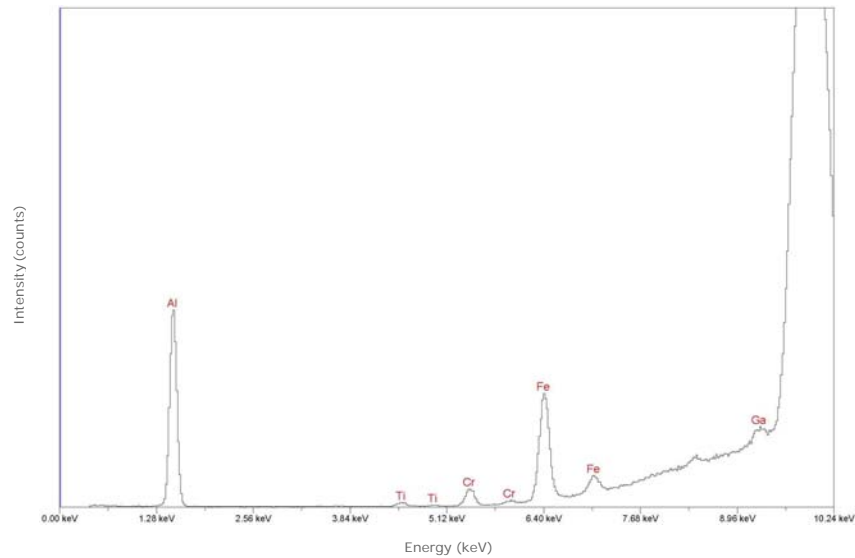


© GIA. Photo by Robert Weldon.

Spectrum



Chemistry | EDXRF





© GIA. Photo by Robert Weldon.

Species - Variety:

**Corundum - Sapphire**

Locality:

**Sri Lanka**

*Description*

Shape: Cushion

Weight: 3.48 ct

Dimensions: 9.62 x 8.41 x 5.06 mm

Diaphaneity: Transparent

Color: Medium, slightly grayish, Blue

*Gemological Properties*

Optical Character: Uniaxial negative

Refractive Index: 1.760 / 1.768

Birefringence: 0.008

Specific Gravity: 3.99

Pleochroism: Violet / Light brown

Luster: Vitreous

Phenomenon: None

Fluorescence:

LWUV: Moderate orangy-red with even distribution

SWUV: None

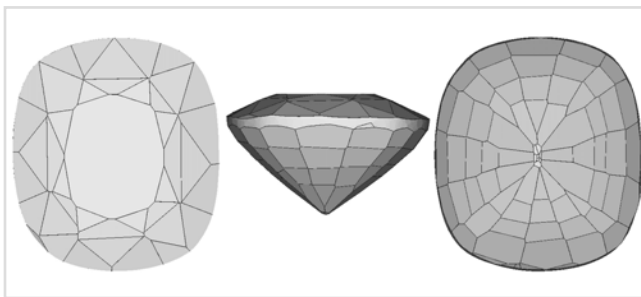
Phosphorescence:

LWUV: None

SWUV: None

Absorption Spectrum:

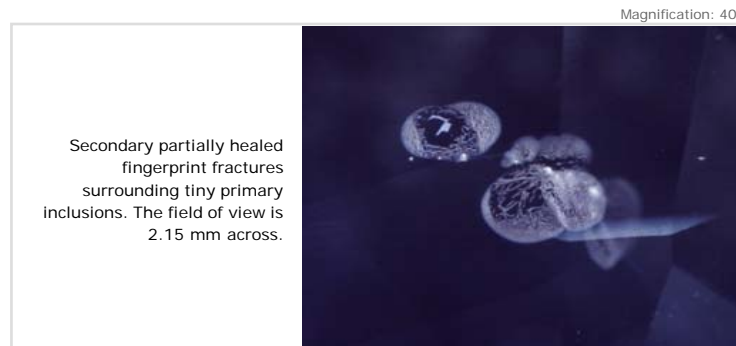
Broad absorption below 420 nm and above 640 nm; lines at 455 and 693 nm (doublet)



Facet Diagram: top | side | bottom

*Photomicrograph*

This sapphire contains several secondary partially healed fingerprint fractures surrounding tiny primary inclusions. A few fine exsolution particles and needles are present. The intact fluid inclusions are evidence that this sapphire has not been heated.



© GIA. Photomicrograph by John Koivula.

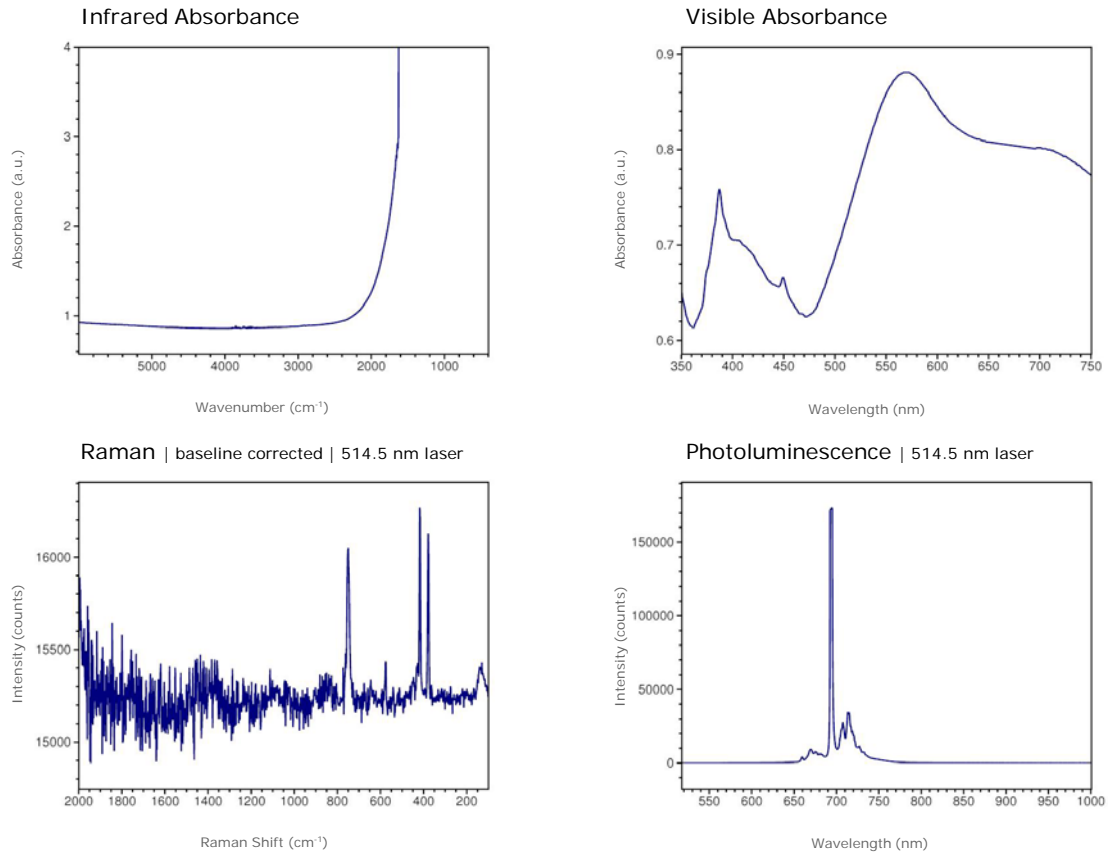
GIA Gem Database | Edward J. Gübelin Collection

Corundum - Sapphire | Sri Lanka  
GIA Collection Number: 33092

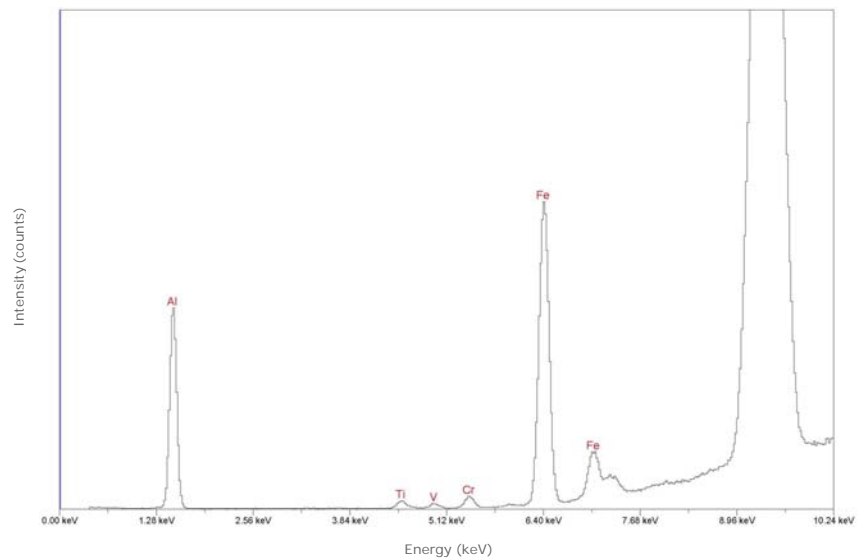


© GIA. Photo by Robert Weldon.

Spectrum



Chemistry | EDXRF





© GIA. Photo by Robert Weldon.

Species - Variety:

**Corundum - Sapphire**

Locality:

**Sri Lanka, Sabaragamuwa, Ratnapura**

*Description*

Shape: Oval

Weight: 16.77 ct

Dimensions: 15.79 x 13.38 x 9.95 mm

Diaphaneity: Transparent

Color: Light, very slightly grayish, Red-Purple

*Gemological Properties*

Optical Character: Uniaxial negative

Refractive Index: 1.760 / 1.768

Birefringence: 0.008

Specific Gravity: 3.99

Pleochroism: Pink / Light brown

Luster: Vitreous

Phenomenon: None

Fluorescence:

LWUV: Strong red with even distribution

SWUV: None

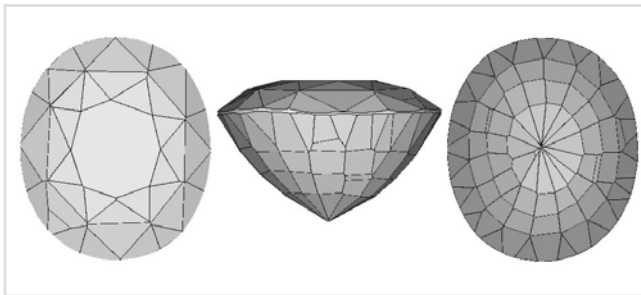
Phosphorescence:

LWUV: None

SWUV: None

Absorption Spectrum:

Broad absorption below 420 nm; lines at about 450 and 693 nm (doublet)

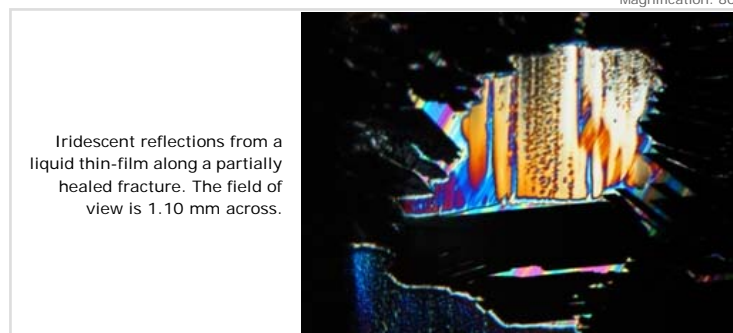


Facet Diagram: top | side | bottom

*Photomicrograph*

This red-purple sapphire contains a cloud of tiny exsolution needles and particles, tiny particles aligned in parallel bands, and several partially healed fractures.

Magnification: 80x



Iridescent reflections from a liquid thin-film along a partially healed fracture. The field of view is 1.10 mm across.

© GIA. Photomicrograph by John Koivula.

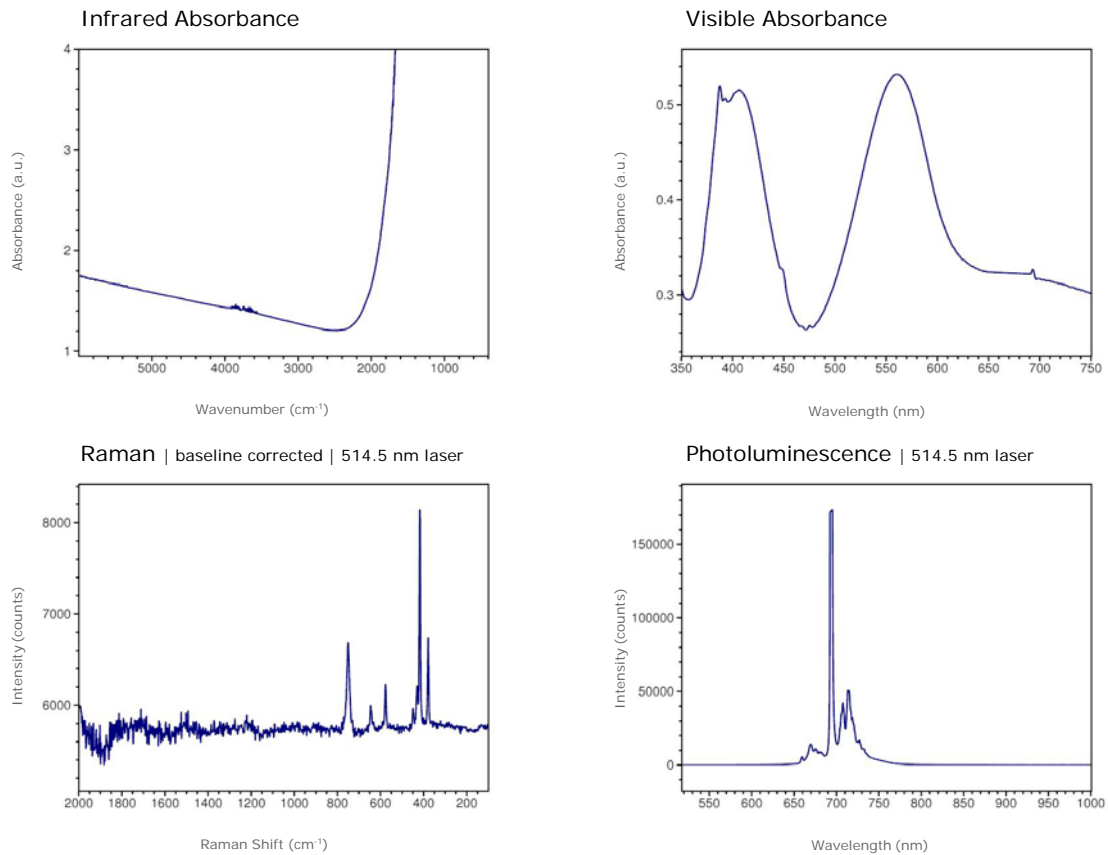
# GIA Gem Database | Edward J. Gübelin Collection

Corundum - Sapphire | Sri Lanka, Sabaragamuwa  
GIA Collection Number: 34881

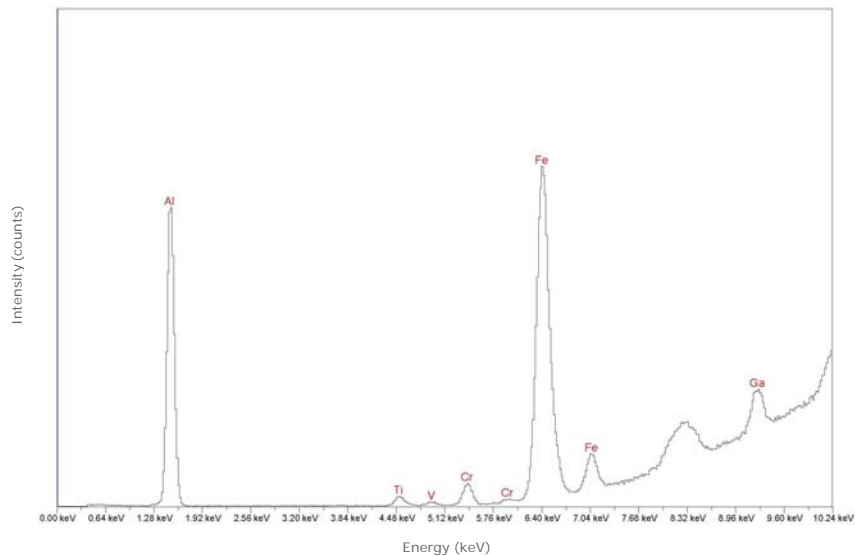


© GIA. Photo by Robert Weldon.

## Spectrum



## Chemistry | EDXRF





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Species - Variety:

**Corundum - Sapphire**

Locality:

**Tanzania, Tanga, Umba Valley**

*Description*

Shape: Oval

Weight: 3.97 ct

Dimensions: 11.84 x 8.10 x 4.98 mm

Diaphaneity: Transparent

Color: Very dark, grayish, Red-Purple

*Gemological Properties*

Optical Character: Uniaxial negative

Refractive Index: 1.761 / 1.769

Birefringence: 0.008

Specific Gravity: 4.00

Pleochroism: Orangy red / Purplish red

Luster: Vitreous

Phenomenon: None

Fluorescence:

LWUV: None

SWUV: None

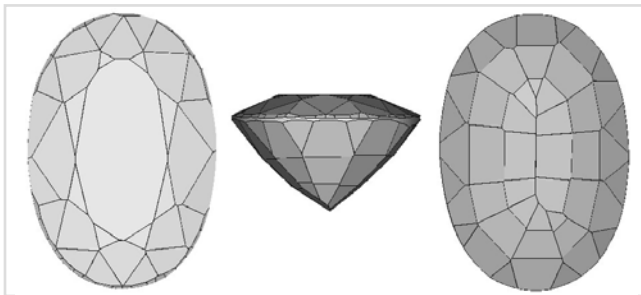
Phosphorescence:

LWUV: None

SWUV: None

Absorption Spectrum:

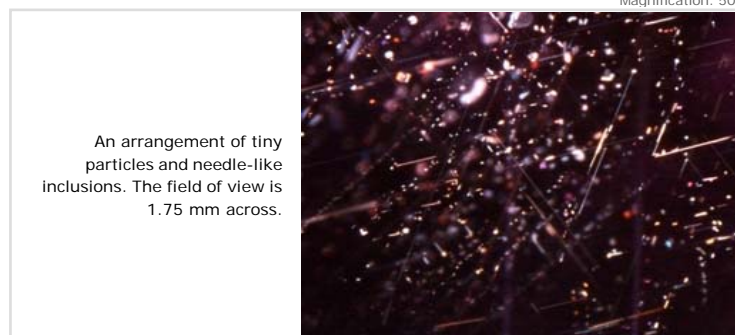
Broad absorption below 420 nm and between about 540-580 nm; lines at about 450, 468, 476 (doublet) and 693 nm (doublet)



Facet Diagram: top | side | bottom

*Photomicrograph*

This red-purple sapphire exhibits polysynthetic twinning and numerous tiny particle and needles in parallel bands.



© GIA. Photomicrograph by John Koivula.

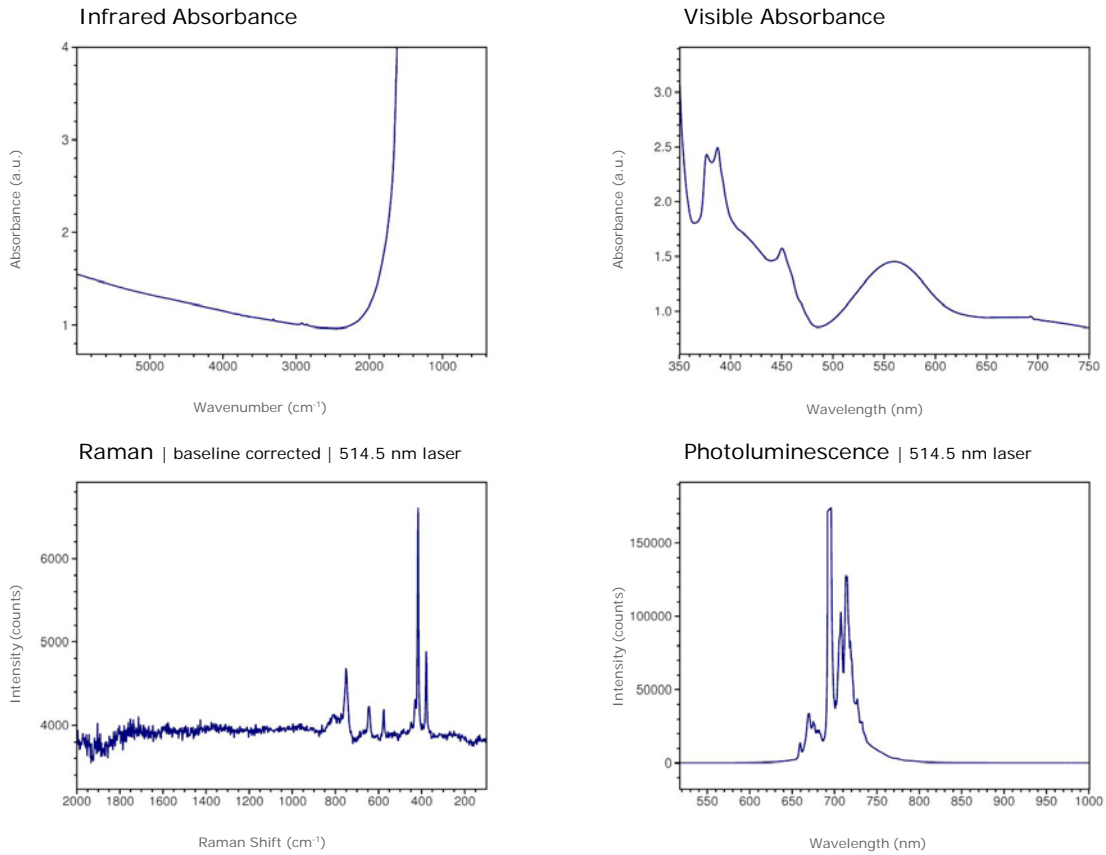
GIA Gem Database | Edward J. Gübelin Collection

Corundum - Sapphire | Tanzania, Tanga  
GIA Collection Number: 35025

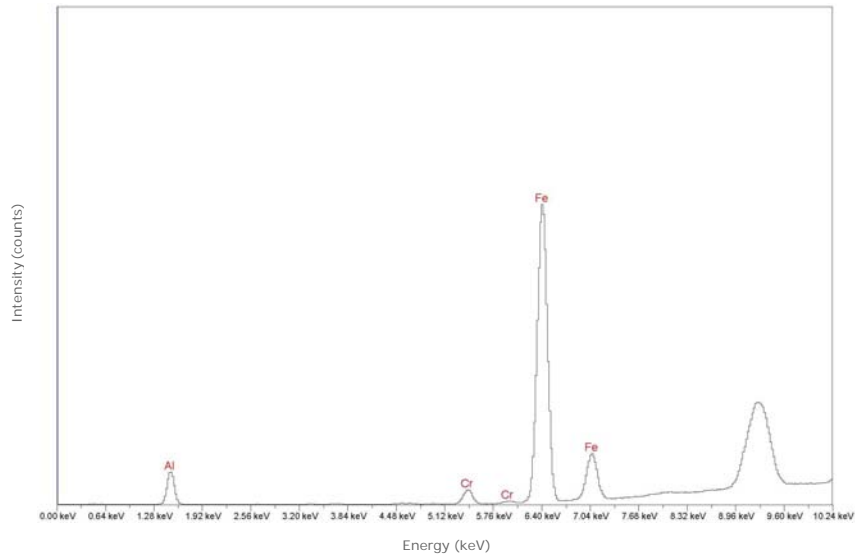


© GIA. Photo by Robert Weldon.

Spectrum



Chemistry | EDXRF





© GIA. Photo by Robert Weldon.

Species - Variety:

**Corundum - Sapphire**

Locality:

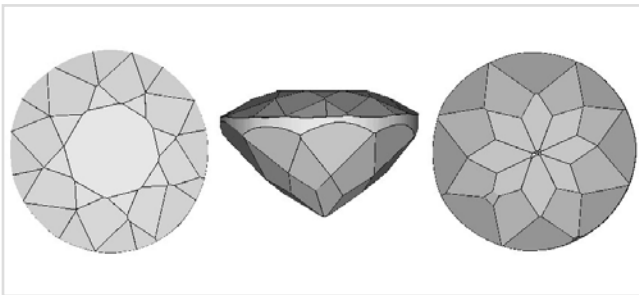
**Tanzania, Tanga, Umba Valley**

*Description*

Shape: Round  
Weight: 3.97 ct  
Dimensions: 9.11 x 9.40 x 5.83 mm  
Diaphaneity: Transparent  
Color: Medium, moderately strong, Yellow-Green

*Gemological Properties*

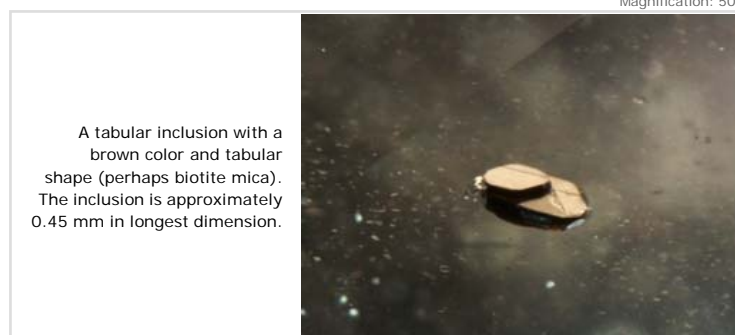
Optical Character: Uniaxial negative  
Refractive Index: 1.763 / 1.772  
Birefringence: 0.009  
Specific Gravity: 4.00  
Pleochroism: Light yellow / Dark yellow  
Luster: Vitreous  
Phenomenon: None  
Fluorescence:  
LWUV: None  
SWUV: None  
Phosphorescence:  
LWUV: None  
SWUV: None  
Absorption Spectrum:  
Broad absorption below 420 nm; lines at about 450, 468, and 476 nm (doublet)



Facet Diagram: top | side | bottom

*Photomicrograph*

This yellow-green sapphire contains numerous tiny particle and needle-like inclusions, and a larger mineral inclusion with a tabular shape.



© GIA. Photomicrograph by John Koivula.

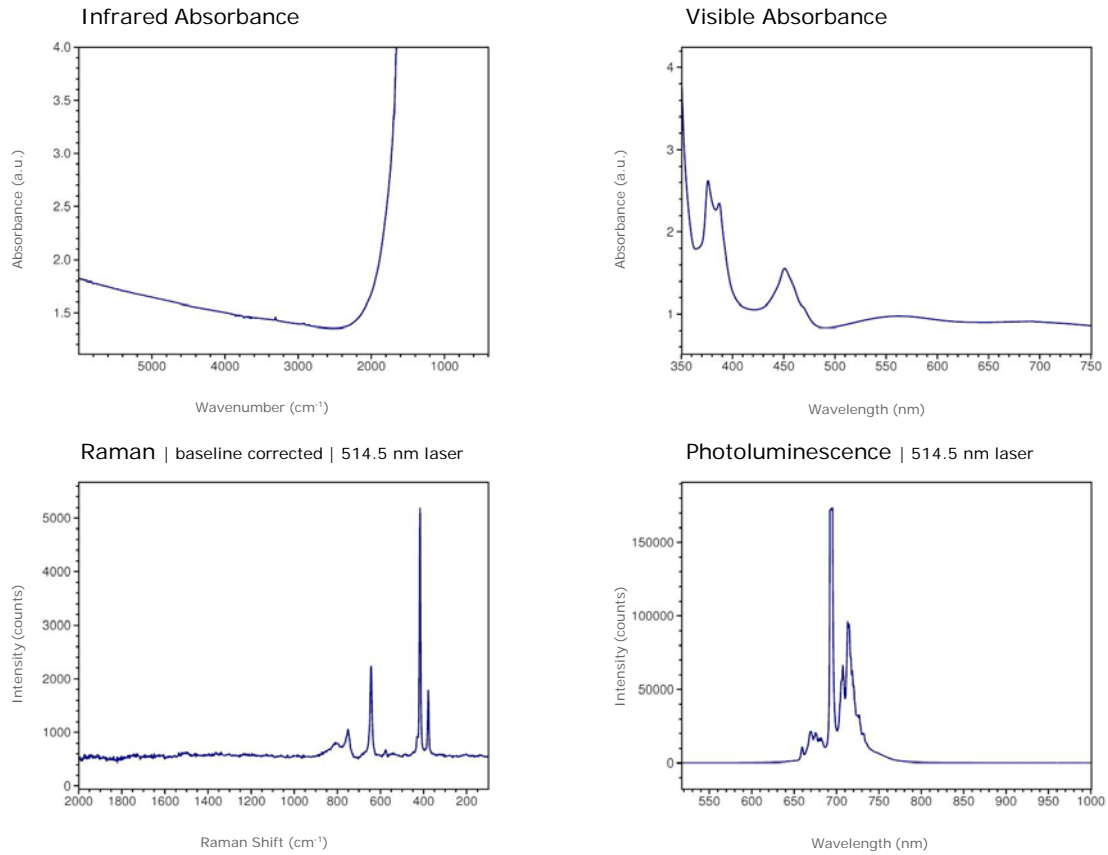
GIA Gem Database | Edward J. Gübelin Collection

Corundum - Sapphire | Tanzania, Tanga  
GIA Collection Number: 35047

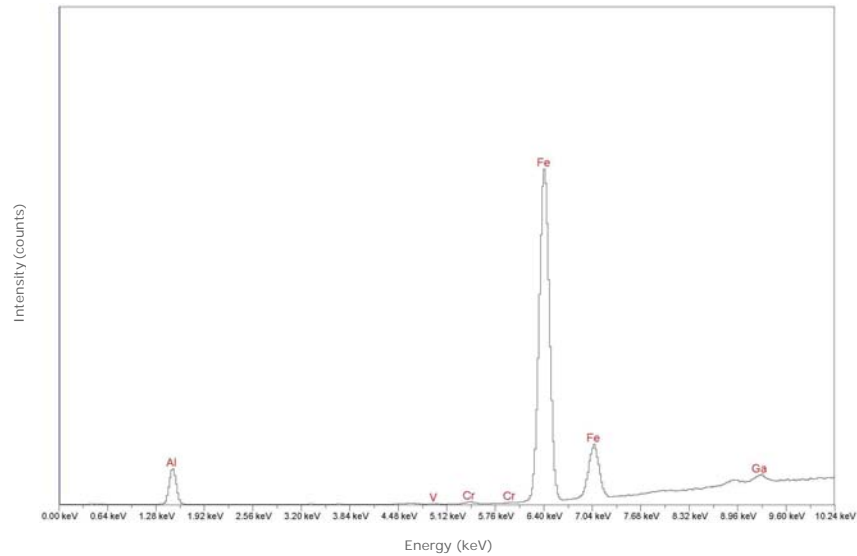


© GIA. Photo by Robert Weldon.

Spectrum



Chemistry | EDXRF





© GIA. Photo by Robert Weldon.

Species - Variety:

**Corundum - Sapphire**

Locality:

**Thailand, Chanthaburi, Tha Mai (Bang Kha Cha)**

*Description*

Shape: Oval

Weight: 2.06 ct

Dimensions: 7.57 x 6.36 x 5.38 mm

Diaphaneity: Transparent

Color: Medium dark, strong, Blue

*Gemological Properties*

Optical Character: Uniaxial negative

Refractive Index: 1.761 / 1.769

Birefringence: 0.008

Specific Gravity: 3.99

Pleochroism: Greenish blue / Violetish blue

Luster: Vitreous

Phenomenon: None

Fluorescence:

LWUV: None

SWUV: None

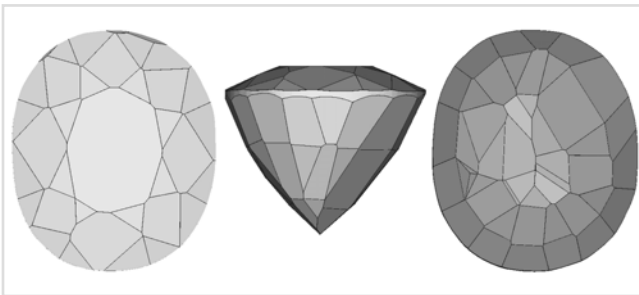
Phosphorescence:

LWUV: None

SWUV: None

Absorption Spectrum:

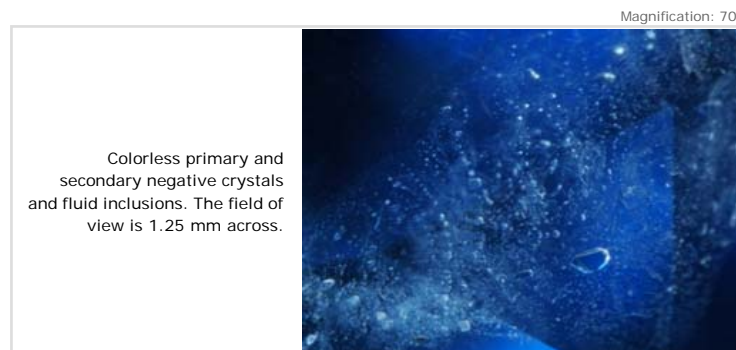
Broad absorption below 420 nm and above about 600 nm;  
line at about 450 nm



Facet Diagram: top | side | bottom

*Photomicrograph*

This blue sapphire contains several fractures and smaller negative crystals. A cloud of very fine particles is scattered throughout the stone.



© GIA. Photomicrograph by John Koivula.

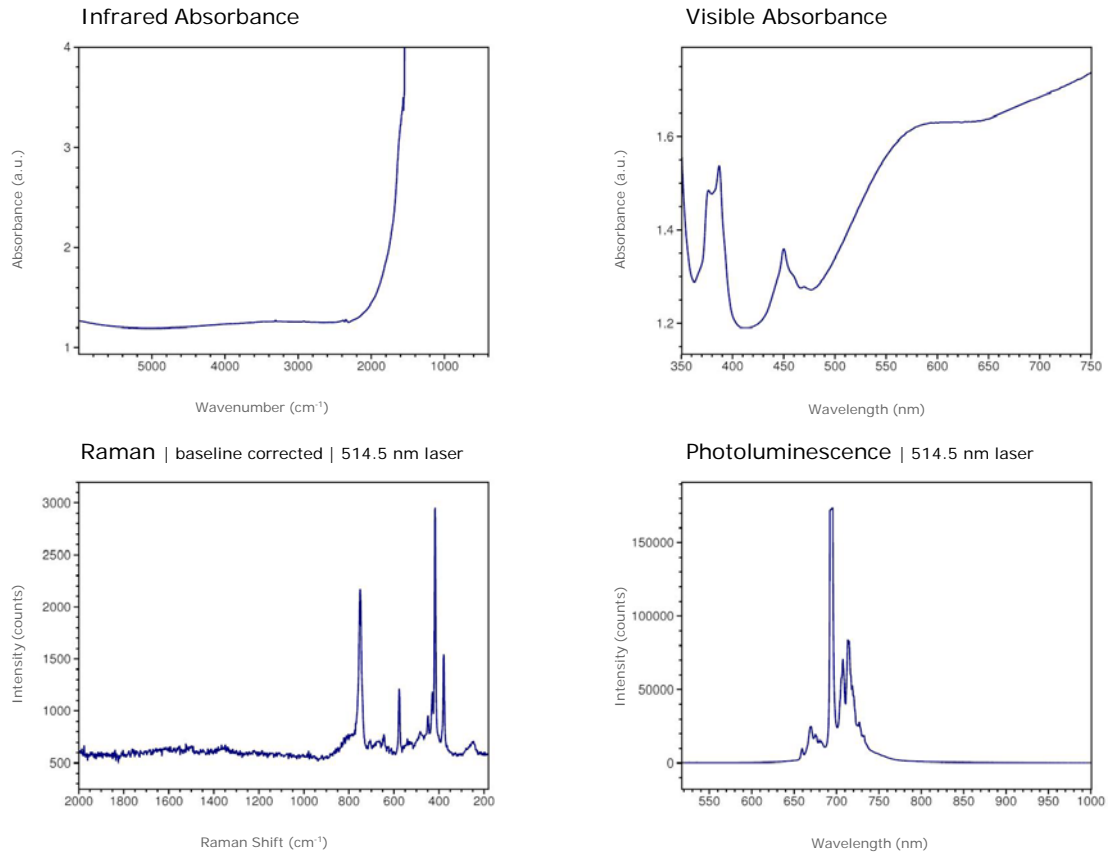
GIA Gem Database | Edward J. Gübelin Collection

Corundum - Sapphire | Thailand, Chanthaburi  
GIA Collection Number: 35097

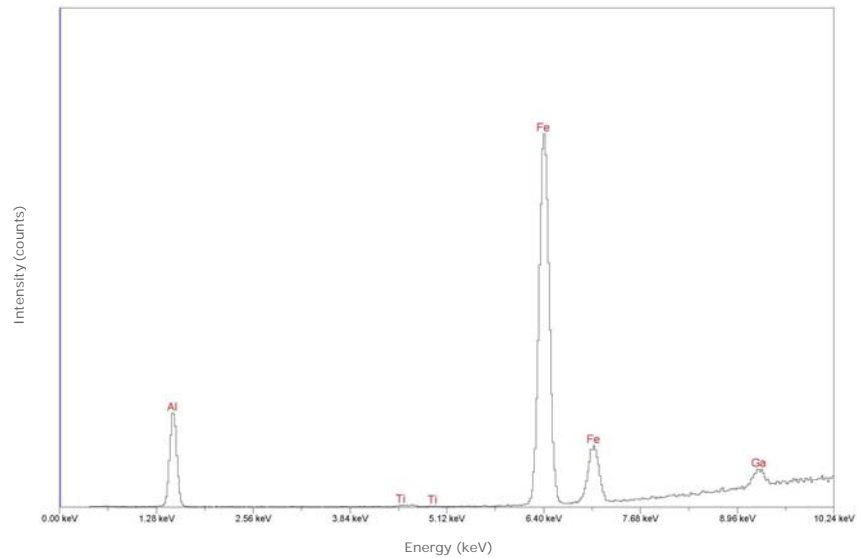


© GIA. Photo by Robert Weldon.

Spectrum



Chemistry | EDXRF





© GIA. Photo by Robert Weldon.

Species - Variety:

**Corundum - Ruby**

Locality:

**Thailand, Chanthaburi, Tha Mai (Bang Kha Cha)**

*Description*

Shape: Cushion

Weight: 2.51 ct

Dimensions: 7.66 x 6.41 x 4.82 mm

Diaphaneity: Transparent

Color: Medium dark, strong, slightly purplish Red

*Gemological Properties*

Optical Character: Uniaxial negative

Refractive Index: 1.762 / 1.770

Birefringence: 0.008

Specific Gravity: 4.00

Pleochroism: Orangy red / Purplish red

Luster: Vitreous

Phenomenon: None

Fluorescence:

LWUV: Moderate red with even distribution

SWUV: None

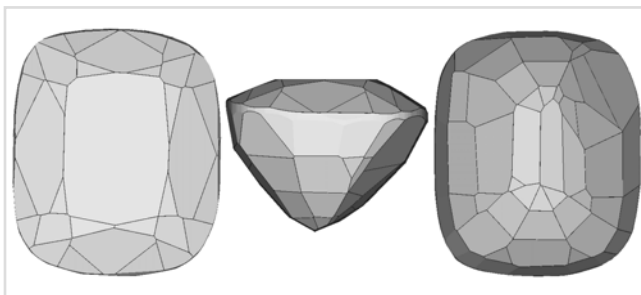
Phosphorescence:

LWUV: None

SWUV: None

Absorption Spectrum:

Broad absorption below 450 nm and from 530-590 nm; lines at about 468, 476 (doublet), 660, 675, and 693 nm (doublet)

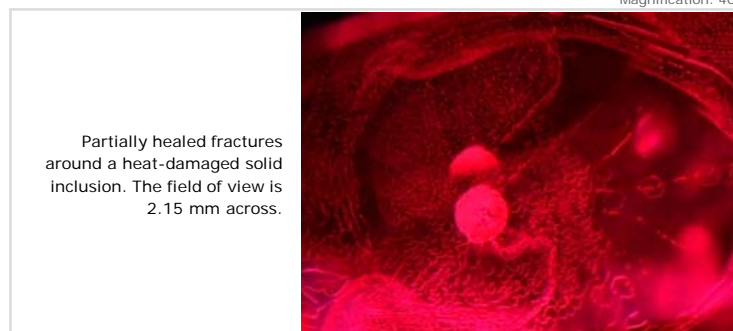


Facet Diagram: top | side | bottom

*Photomicrograph*

This reddish-purple sapphire contains partially healed fractures, one of which is associated with a heat-damaged solid inclusion.

Magnification: 40x



Partially healed fractures around a heat-damaged solid inclusion. The field of view is 2.15 mm across.

© GIA. Photomicrograph by John Koivula.

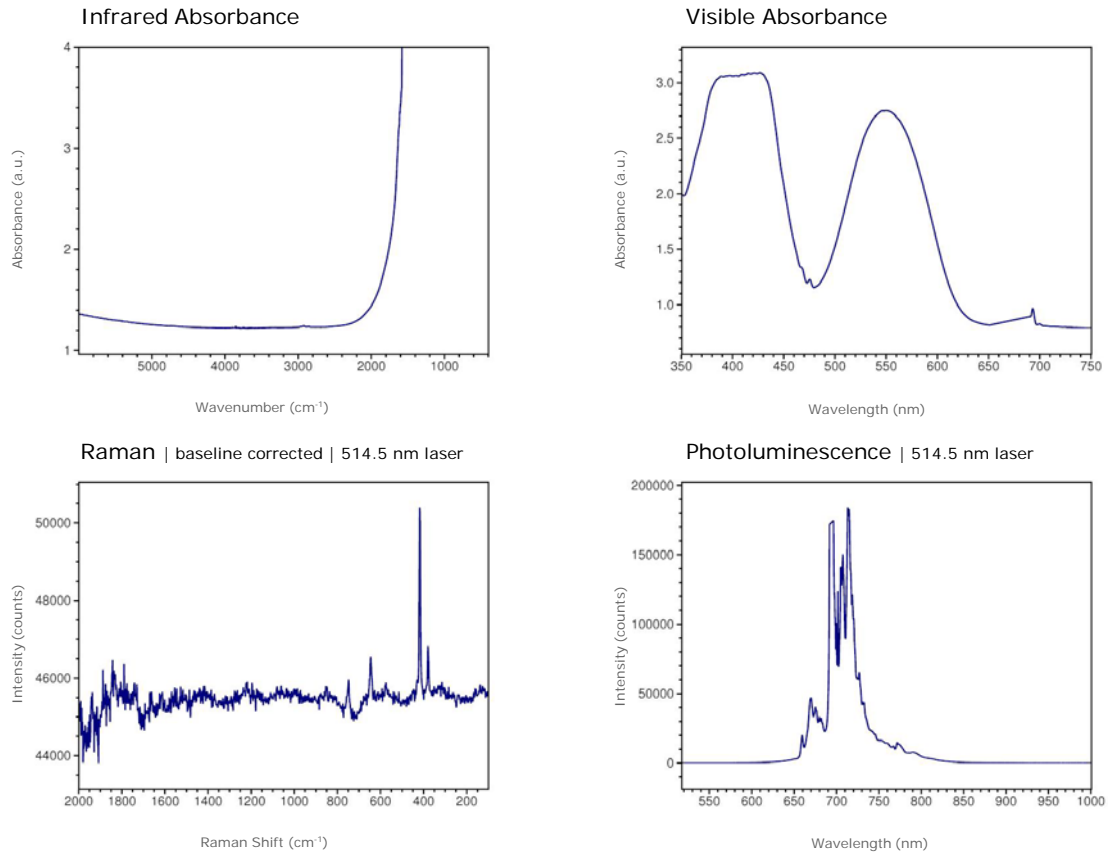
# GIA Gem Database | Edward J. Gübelin Collection

Corundum - Ruby | Thailand, Chanthaburi  
GIA Collection Number: 35119

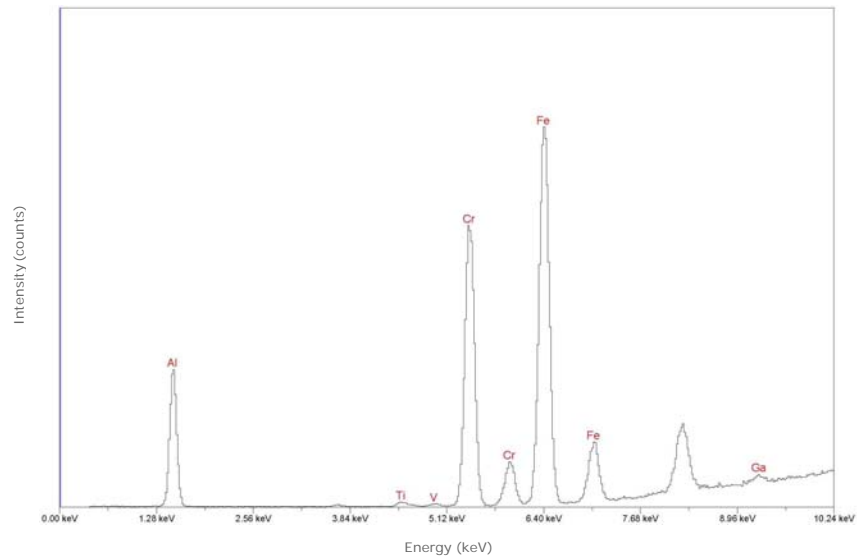


© GIA. Photo by Robert Weldon.

## Spectrum



## Chemistry | EDXRF





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Species - Variety:

**Corundum - Sapphire**

Locality:

**Thailand, Chanthaburi**

*Description*

Shape: Oval

Weight: 4.94 ct

Dimensions: 12.82 x 9.65 x 4.45 mm

Diaphaneity: Transparent

Color: Medium dark, moderately strong, Yellow

*Gemological Properties*

Optical Character: Uniaxial negative

Refractive Index: 1.763 / 1.771

Birefringence: 0.008

Specific Gravity: 4.01

Pleochroism: None

Luster: Vitreous

Phenomenon: None

Fluorescence:

LWUV: None

SWUV: None

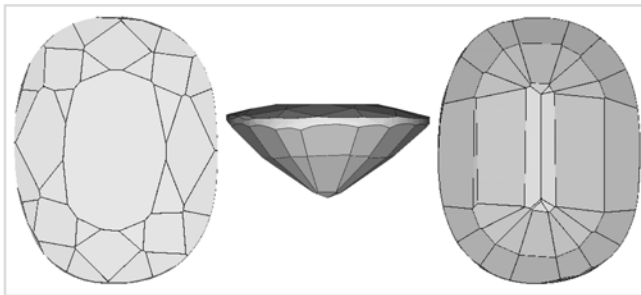
Phosphorescence:

LWUV: None

SWUV: None

Absorption Spectrum:

Broad absorption below 420 nm; lines at about 450, 468 and 476 nm



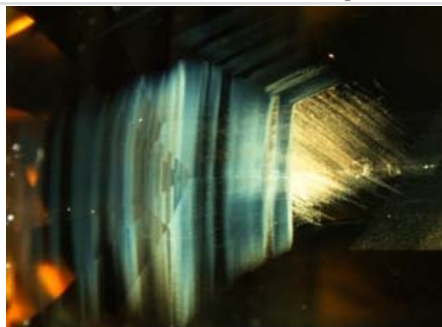
Facet Diagram: top | side | bottom

*Photomicrograph*

This yellow sapphire is relatively free of internal features except for a pattern of intersecting color and growth bands that are marked by particle bands.

Magnification: 20x

A pattern of intersecting growth bands marked by particle inclusions. The field of view is 4.35 mm across.



© GIA. Photomicrograph by John Koivula.

# GIA Gem Database | Edward J. Gübelin Collection

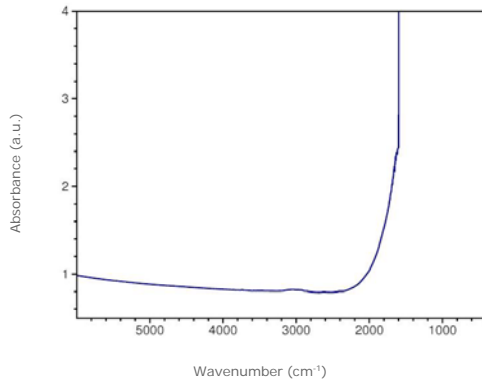
Corundum - Sapphire | Thailand, Chanthaburi  
GIA Collection Number: 35144



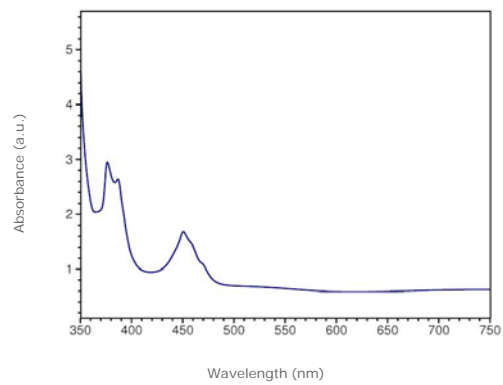
© GIA. Photo by Robert Weldon.

## Spectrum

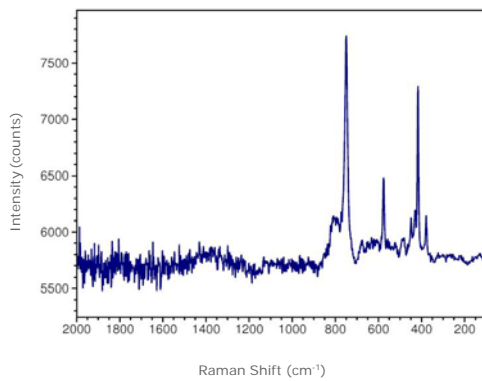
Infrared Absorbance



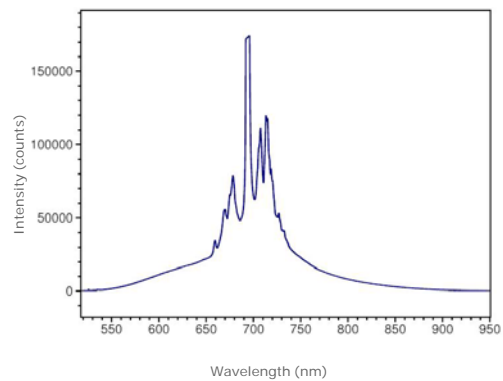
Visible Absorbance



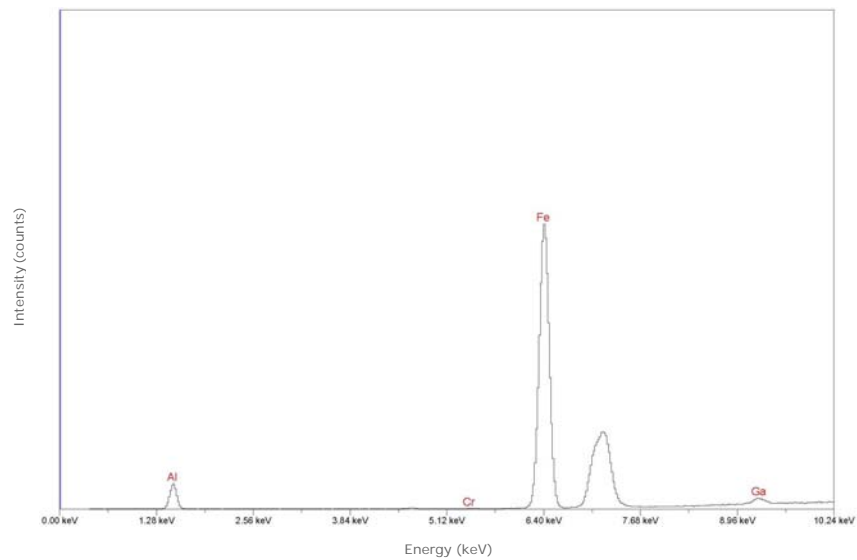
Raman | baseline corrected | 514.5 nm laser



Photoluminescence | 514.5 nm laser



## Chemistry | EDXRF





© GIA. Photo by Robert Weldon.

Species - Variety:

**Corundum - Sapphire**

Locality:

**Thailand, Chanthaburi**

*Description*

Shape: Cushion

Weight: 3.89 ct

Dimensions: 8.74 x 7.89 x 5.80 mm

Diaphaneity: Transparent

Color: Dark, very slightly brownish, orangy Yellow

*Gemological Properties*

Optical Character: Uniaxial negative

Refractive Index: 1.763 / 1.772

Birefringence: 0.009

Specific Gravity: 4.01

Pleochroism: None

Luster: Vitreous

Phenomenon: None

Fluorescence:

LWUV: None

SWUV: None

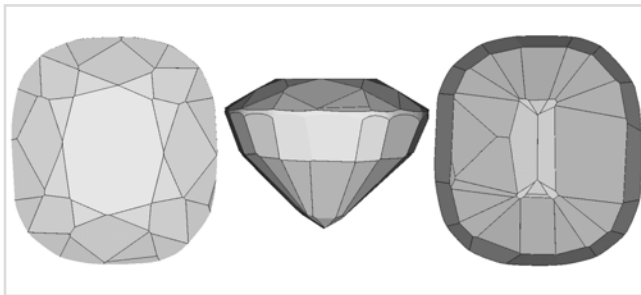
Phosphorescence:

LWUV: None

SWUV: None

Absorption Spectrum:

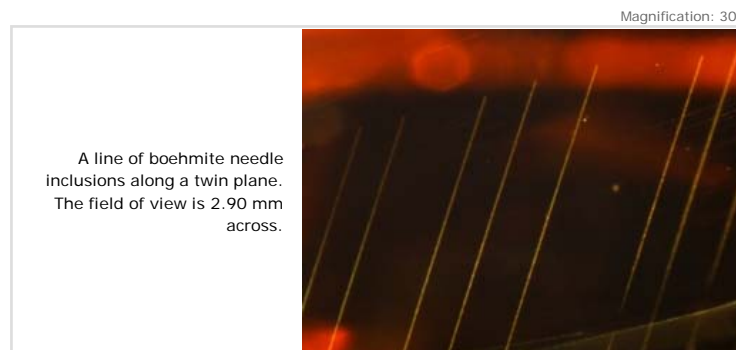
Broad absorption from 450-470 nm; line at 477 nm



Facet Diagram: top | side | bottom

*Photomicrograph*

This orangy-yellow sapphire contains a small partially healed fracture, and a series of parallel boehmite needle inclusions along a lamellar twin plane.



© GIA. Photomicrograph by John Koivula.

GIA Gem Database | Edward J. Gübelin Collection

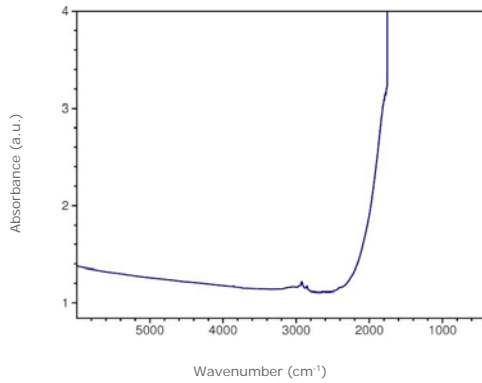
Corundum - Sapphire | Thailand, Chanthaburi  
GIA Collection Number: 35147



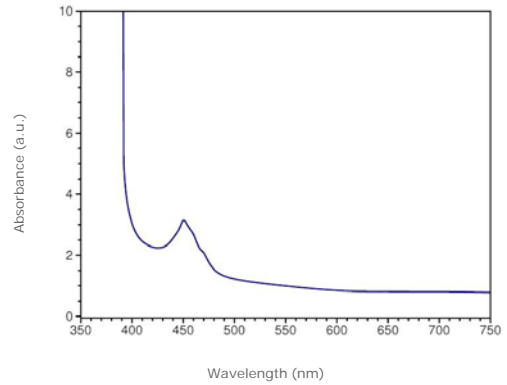
© GIA. Photo by Robert Weldon.

Spectrum

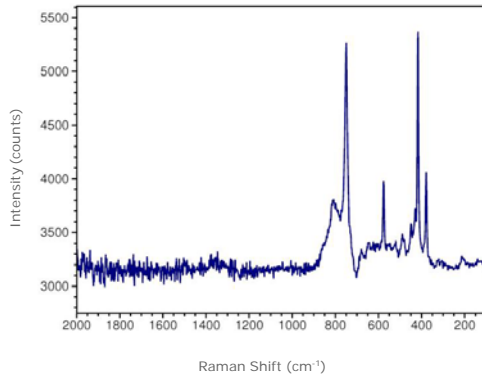
Infrared Absorbance



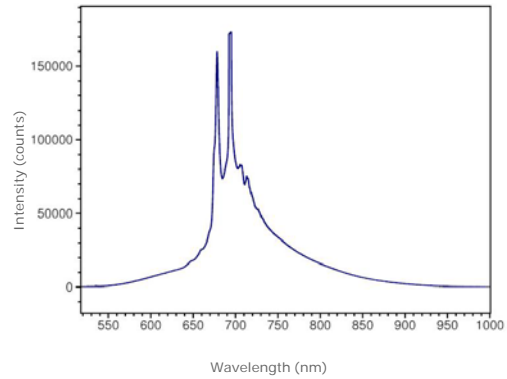
Visible Absorbance



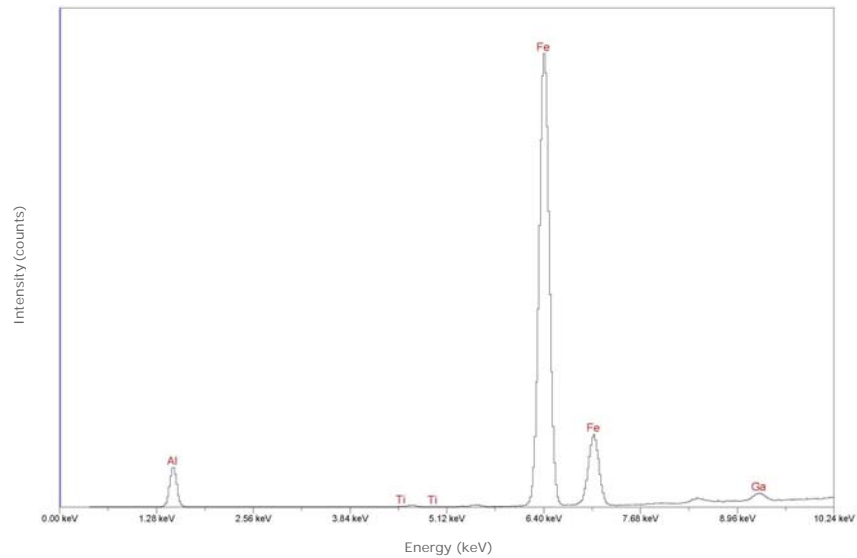
Raman | baseline corrected | 514.5 nm laser

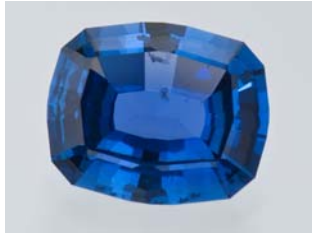


Photoluminescence | 514.5 nm laser



Chemistry | EDXRF





© GIA. Photo by Robert Weldon.

Species - Variety:

**Corundum - Sapphire**

Locality:

**United States, Montana (Judith Basin), Yogo Gulch**

*Description*

Shape: Cushion

Weight: 2.57 ct

Dimensions: 9.12 x 7.55 x 3.71 mm

Diaphaneity: Transparent

Color: Medium, strong, violetish Blue

*Gemological Properties*

Optical Character: Uniaxial negative

Refractive Index: 1.760 / 1.768

Birefringence: 0.008

Specific Gravity: 4.01

Pleochroism: Greenish blue / Violetish blue

Luster: Vitreous

Phenomenon: None

Fluorescence:

LWUV: None

SWUV: None

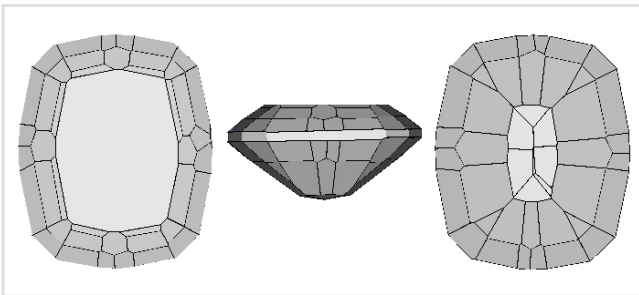
Phosphorescence:

LWUV: None

SWUV: None

Absorption Spectrum:

Broad absorption below 420 nm and above 600 nm; line at about 450 nm



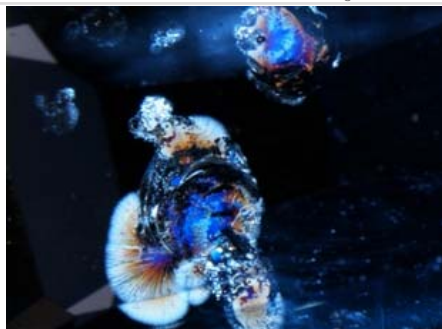
Facet Diagram: top | side | bottom

*Photomicrograph*

This blue sapphire contains several partially healed fracture with iridescent fingerprint inclusions with small solid inclusions and negative crystals.

Magnification: 20x

These fingerprints exhibit thin-film iridescence colors due to light from a fiber-optic illuminator. The field of view is 4.35 mm across.



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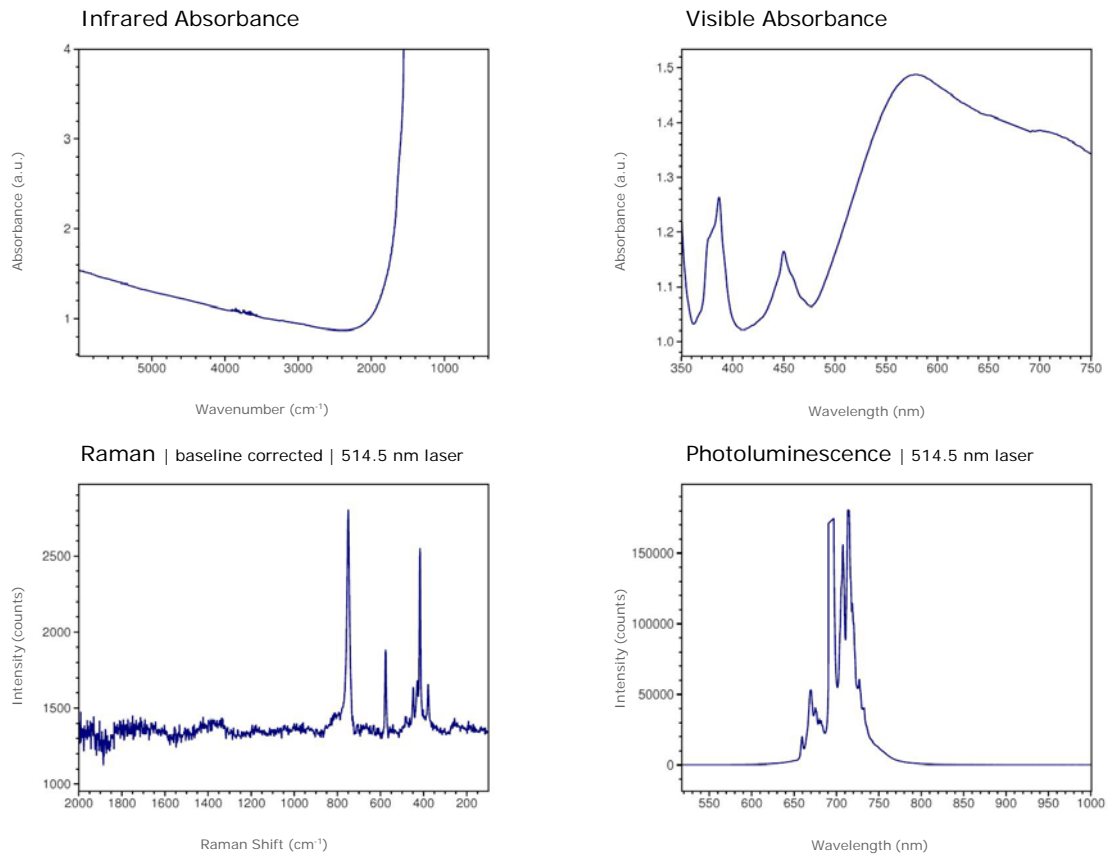
GIA Gem Database | Edward J. Gübelin Collection

Corundum - Sapphire | United States, Montana (Judith Basin)  
GIA Collection Number: 35216



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Spectrum



Chemistry | EDXRF

