



# SPECTROSCOPY IN GEMOLOGY

## 4-DAY INTENSIVE COURSE

*MAY 11-14, 2026, MAGILABS USA - HOUSTON, TEXAS, USA*

### Course schedule

#### Day one

- Introduction to spectroscopy, the importance of reliable sample collections.
- UV-Vis-NIR spectroscopy. Techniques. Demo and explanation of the instrumentation, Gemological applications for diamonds and colored stones.
- Introduction to vibrational spectroscopy.
- Raman spectroscopy. The Raman effect. Demo and explanation of the instrumentation, gem identification, treatments. Confocal Raman spectroscopy. Limitations

#### Day two

- Photoluminescence (PL) spectroscopy. Demo and explanation of the instrumentation. Liquid nitrogen immersion technique for diamonds. Gem identification, treatments.
- Fourier Transform InfraRed spectroscopy (FTIR). Demo and explanation of the instrumentation. Absorption technique for diamonds and colored stones. Treatments. Specular reflection technique for gem identification.

#### Day three

- Fluorescence spectroscopy. Demo and explanation of the instrumentation. Identification of natural diamonds. Identification of colored stones. Treatments. Fluorescence microscopy and imaging.
- XRF spectroscopy. Demo and explanation of the instrumentation. Trace elements identification. Gemological applications.
- Laser-Induced Breakdown Spectroscopy (LIBS) – Explanation of the instrumentation. Theoretical insights into light-element detection and semi-quantitative analysis.
- Laser Ablation ICP-MS (LA-ICP-MS) – Explanation of the instrumentation. Theoretical coverage of high-sensitivity trace-element analysis for origin determination.

## **Day four**

- Full-day final practical session with a collection of more than 100 samples specifically selected to cover the main cases for diamonds and colored stones.
- Multi-instrumentation practical approach to the main gemological issues from identification to treatments.

## **Venue**

Courses are held at MAGILABS USA premises, 2400 Augusta drive, suite 435, 77057 – Houston, Texas, USA.

## **Schedule**

The four sessions run from 9:00–13:00 and 14:00–16:30, with a 15 mins coffee-break at 11 and one-hour lunch break.

## **Materials**

Bring pen, pencil, ruler, and paper. All other instruments are provided by MAGILABS USA; personal equipment and samples may also be used.

## **Entry Requirements**

No prior spectroscopy background is necessary and the course is open to all, but a robust background in gemology is required.

The MAGILABS team reserves the right to approve participation after reviewing each candidate's competencies.

## **Qualification**

The participants who will pass the exam will receive the Magilabs "Gemological Spectroscopy Certificate"