

RAINBOW LATTICE: THE FELDSPAR WITH TWO PHENOMENA

Brecken Branstrator, GIA GG

The time is right for rare and phenomenal stones as buyers look for unique gems that will set their designs apart. Rainbow lattice is a fascinating material that fits the bill perfectly. The rare phenomenal gem is moonstone—a feldspar comprised of orthoclase and albite—so it exhibits adularescence, but it also showcases aventurescence and displays elongated and triangular mineral platelets that create an interesting effect.

Its discovery came in 1985 in Australia, and rainbow lattice was acknowledged as a new gem material four years later, according to GIA. The initial testing of the stone's inclusions concluded the black blades and triangles were made of ilmenite, while the orange platelets were hematite. But as technology advanced, recent research, published in the *Journal of Gemmology* in 2018, found that the black blades and triangle inclusions in rainbow lattice were, in fact, magnetite.

The magnetite inclusions form as thin blades at different levels in one plane and orientate to create a lattice pattern. In many cases, the magnetite inclusions may have oxidized or altered through geophysical processes, creating iridescence or a rainbow effect across the lattice pattern. Those that weren't altered are black with a metallic sheen.

The hematite, which appears in most of the material, is seen in small yellow to deep orange platelets that can appear hexagonal in shape and generally are in one plane within the feldspar, creating the phenomenon called aventurescence and giving some of the material an orange coloring.



*Rainbow lattice feldspar from Harts Range, Northern Territory, Australia.
(Image courtesy Asterism Gems Australia)*



*This piece of rainbow lattice is the biggest single gem-quality piece Asterism Gems has found to date.
(Image courtesy Asterism Gems Australia)*



*These images show a rainbow lattice cabochon under the same lighting but at three different angles.
(Image courtesy Asterism Gems Australia)*

Only one source is currently known for rainbow lattice: the Utnerengatye mine in Harts Range, Northern Territory, Australia, owned by Asterism Gems Australia. The lease covers an area smaller than 500 x 400 meters in size, with less than 10% of that showing any material, according to Asterism Gems owner Darren Arthur. The majority of the material is alluvial, weathered out from two pegmatitic formations on the lease and distributed across the ground.

The material has a lot of cracks, making it hard to work with and hard to find sizeable clean pieces. This means Asterism Gems mines only by hand as excavators

would damage a higher percentage of premium material. The digging process can yield very little gem-quality material, Arthur said, noting most of the company's production is specimen and tumbling quality due to those typical cleavage stress cracks. The higher-grade pieces are separated for individual lapidary finishing, resulting in a range of styles available to the market.

To help with identification, the research published in the Journal of Gemmology said testing of the material revealed average RIs of 1.518 to 1.540 and an SG of 2.58, consistent with orthoclase. ◆

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