

Phenomenal Glass Gemstones

By James Evans, FGA

At once the most undervalued of gemstones, and the most remarkable...
Glass is unrivalled in the range of optical phenomena it displays.

Goldstone

(*aventurescence*)

This glittering gemstone, also known as 'Aventurine Glass', is the origin of the term *aventurescence*. The term was later applied to varieties of quartz and feldspar that contain glittering flakes of mica.

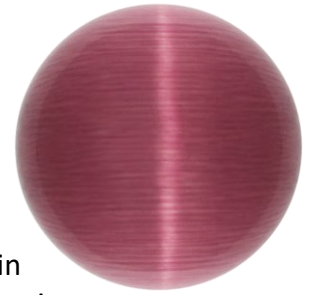


The optical effect is a result of reflections from numerous small crystals (typically copper octahedra) which grow within the glass as it cools.

Cat's-eye Glass

(*chatoyancy*)

This gemstone displays a bright and even *cat's-eye*. A more fibrous, shimmering *chatoyancy* can be seen within 'Victoria Stone', though the recipe for producing this gemstone no-longer exists.

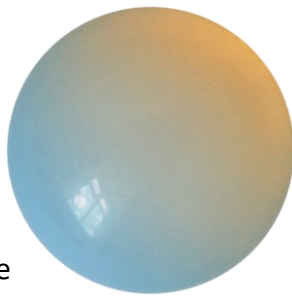


The *cats-eye* effect is a result of reflections from the core of optical fibres, which are fused together to form a parallel, honeycomb-like structure within this gem.

Opalite

(*adularescence*)

Also called 'Opalescent Glass', this gemstone was favoured by Lalique for the golden glow produced by light as it shone through the material, and the cool blue glow from light shining on and across it.

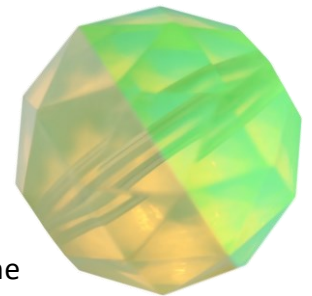


The optical effect results from the scattering of light as it hits areas of partial crystallisation within the glass – with blue light scattered much more than red.

Uranium Glass

(*fluorescence*)

Also called 'Vaseline Glass', this gemstone glows green under UV light – a result of the uranium it contains. From the 1940's uranium became a strategic material, leading to a pause in the gem's production.



The optical effect results from the chemistry of uranium, not its radioactivity: UV light is absorbed by electrons before being re-emitted as green light.

Nd- & Pr-doped glass

(*colour-change*)

This remarkable gemstone displays a vivid green in fluorescent light, yellow in LED light, an amber-orange in incandescent light, and a purplish-pink in sunlight. This partially resembles 'Zultanite'; a trademarked name for colour-change diaspore.

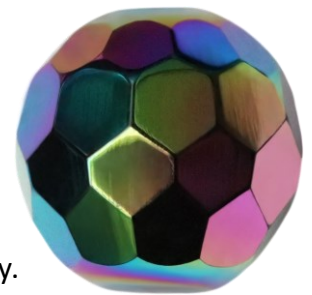


The optical effect is a result of rare earth elements (Nd and Pr) within the glass. A more subtle (lilac to blue) effect is produced in 'Neodymium Glass'.

Carnival Glass

(*iridescence*)

Carnival Glass appeared in the early 20th century as an alternative to the 'Favrile Glass' jewellery of Louis Comfort Tiffany. Iridescent glass had previously been developed by the Polish scientist Leo Valentin Pantocsek (in the 19th century), with a still earlier recipe reported by Jābir ibn Ḥayyān (aka Geber) in the 8th century.



The optical effect results from a thin layer of metal on the gem's surface which causes *thin-film interference*.