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cambridge sensotec
advancing excellence in gas analysis

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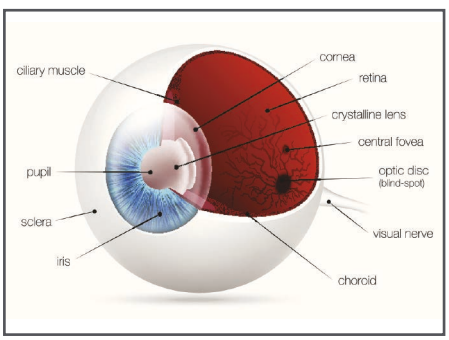
SF6 Gas and Ophthalmology

Sulphur Hexafluoride (SF6) is a synthetic gas comprising of one sulphur and six fluorine atoms. Key properties of the gas are that it is extremely chemically stable and has a relatively high density. Commonly used within the electrical industry as an insulating medium, the properties of SF6 gas also make it ideal for use within ophthalmology.



Applications within the medical and pharmaceutical industry are vast with gases being delivered directly for therapy (e.g. ventilators or anaesthesia) or used for storage, cryogenic freezing or incubation. Pharmaceutical companies use gases in the manufacturing process of numerous products and ingredients, in addition to analysis taking place in laboratories.

Ophthalmology and Retinal Detachment

Ophthalmology is the surgical or medical care of any condition that affects the eye or its associated tissues. These can include; cataracts, genetic eye disorders, trauma or disease. The retina is a light-sensitive layer of tissue that derives metabolic support from the underlying retinal pigment epithelium (RPE). If the retina becomes detached from the RPE it loses function, and so the eye loses sight: this condition is termed retinal detachment. Retinal detachment may occur due to a hole, or break, in the retina (rhegmatogenous retinal detachment), inflammation or leakage (exucative detachment), or contraction of epiretinal membranes (tractional detachment). Rhegmatogenous and tractional retinal detachment are repaired surgically by a procedure called a vitrectomy.

What is a Vitrectomy?

During a vitrectomy, an ophthalmologist (medically trained eye specialist) will remove the vitreous humour, a clear gel-like substance that lies behind the iris. In doing so, they will gain access to the back of the eye, where they may repair the damaged retina.

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SF6 Gas and its use within Ophthalmology

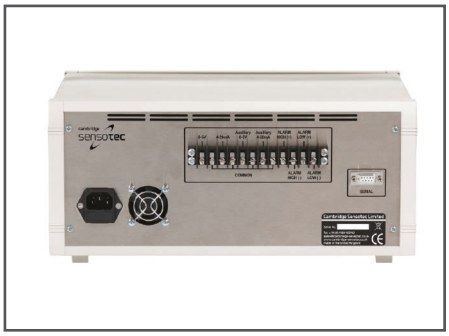
At the end of the vitrectomy surgery, the ophthalmologist is required to fill the space left behind by the vitreous gel. This can be achieved by injecting a mixture of SF6 gas with air into the posterior segment of the eye, in order to create a bubble which "tapenades" the retina while it heals. Due to the low solubility of SF6 gas, the mix remains unabsorbed for 3-4 weeks. In comparison, air on its own would take only a few days to become reabsorbed, which does not allow the retinal attachment sufficient time to become secure.

Why is Gas Analysis Essential?

In order to validate their techniques, it is important that ophthalmologists analyse the composition of the air and SF6 gas mixture prior to its use in surgery. In doing so higher precision, purity, traceability, accuracy and performance can be achieved.

About Cambridge Sensotec

Cambridge Sensotec is an established manufacturer of the Rapidox range of high precision gas analysers. The company collaborated with ophthalmologist specialists to develop a bespoke Rapidox SF6 6100 Bench Gas Analyser, which is capable of analysing the minimal amounts of SF6 gas required for vitrectomys. As a privately owned company, staffed by highly skilled technologists, the company is perfectly placed to react to its customers specialised gas analysis requirements. Dynamic and flexible, the company are able to design and supply solutions to suit a variety of gas analysis applications.



The Rapidox SF6 6100 Gas Analysers are specifically designed for the measurement and analysis of SF6 gas within electrical, manufacturing and medical applications. For further information on this range of products please visit our specialist website.

www.sf6.co.uk

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