



# Explaining Ellipse I<sup>2</sup>PL

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CLINICALLY PROVEN

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SAFE AND EFFECTIVE

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# Ellipse I<sup>2</sup>PL stands for Ellipse second-generation Intense Pulsed Light

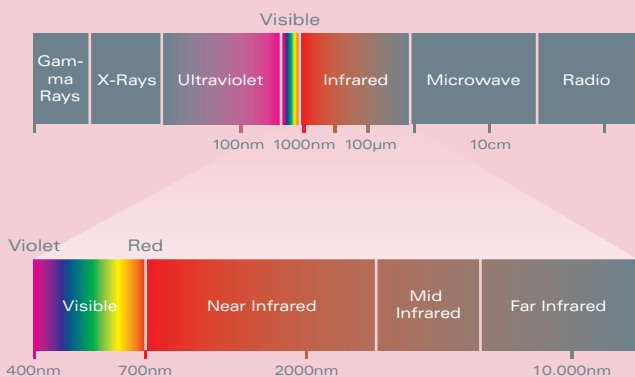
The Ellipse I<sup>2</sup>PL system is used for the treatment of a wide range of skin conditions, including the removal of unwanted hair and the treatment of sun-damaged skin, acne, and vascular and pigmented skin disorders.

To best understand what Ellipse I<sup>2</sup>PL means, we need to break down the concept into its important parts.

## What is light, in this context?

Light is a form of energy. It is part of what scientists call the “Electromagnetic Spectrum” – different forms of energy that all spread out as they travel. Other forms of energy in this spectrum include radio waves and microwaves.

What we consider normal light (white light) is made up of lots of different colours, as can be seen in a rainbow. But since the colours are a little more complicated than the six or seven we can see, scientists use the term “wavelength” to describe a specific colour of light.



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Light of different wavelengths has different properties. Ultraviolet and infrared light, for example, are invisible to the eye. Ultraviolet light from the sun or solarium is what tans the skin. As a side effect it will also accelerate the aging processes in the skin. (This is called sun-damage or photo-aging). Infrared light will heat up the water in the skin.

These wavelengths also have different energies that affect how far the light can travel. Near the surface of the ocean, for example, you can see all colours of light. But lower down in the water the colours disappear until, deep in the ocean, it is impossible to see anything.

The same thing happens in the skin – light can travel only a certain distance, called the penetration depth. The light from the Ellipse I<sup>2</sup>PL System can penetrate a few millimetres into the skin – enough to be able to remove your unwanted hair, and to treat blood vessels, acne or epidermal pigment.

## **The difference between Laser and Intense Pulsed Light**

Treatments with laser and with Intense Pulsed Light both work in the same way, choosing wavelengths that are absorbed by the target. But while a laser uses light with one specific wavelength, Intense Pulsed Light uses an entire waveband. The different wavelengths can penetrate the skin to different depths, so using Intense Pulsed Light is like using a group of lasers in a single treatment.

## **What is Intense Pulsed Light?**

In its simplest form, this is a way of saying short flashes of very bright light. Ellipse uses short, safe bursts of light emitted from a flash-lamp to treat specific skin conditions.

The technology is rather complicated, but the Ellipse system very carefully controls the overall delivery of the light – both the amount of light and the speed of its delivery to your specific skin condition are exact and precisely controlled by Ellipse's built-in computer.

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### **Why second-generation Intense Pulsed Light (I<sup>2</sup>PL) gives a better treatment**

As mentioned earlier, white light is made up of various colours, or wavelengths. The light from the flash-lamp used in Intense Pulsed Light systems includes invisible ultraviolet and infrared light, as well as visible white light.

First-generation Intense Pulsed Light systems filter out the ultraviolet light, but allow the infrared light through. To remove the infrared light, the Ellipse second-generation (I<sup>2</sup>PL) system has a unique extra filter consisting of circulating water. This means that the light components that normally would “heat” the water in the skin now “heat” the water in the system instead. This ensures that the light that is directed to your skin contains only the wavelengths that are relevant to perform the treatment. Treatment with I<sup>2</sup>PL is not only more effective since it does not need any cooling – it is also safer since treatment requires less energy.

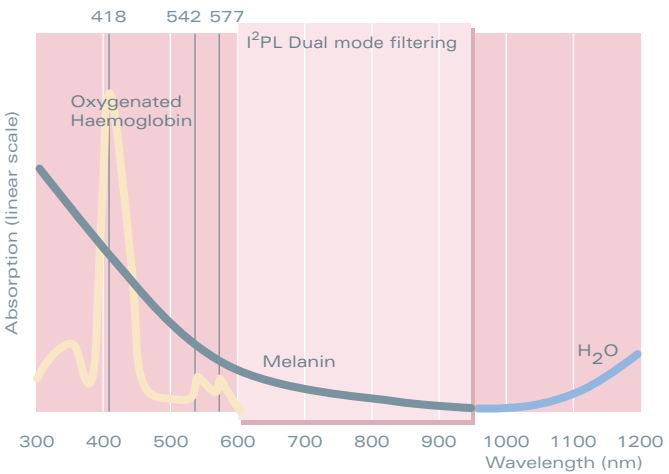
### **How can light be used to perform a treatment?**

When a bright beam of light enters your skin, certain natural pigments in your body absorb the light. One of these pigments is melanin, which is found in the skin and in hair (white hair, red hair and very blond hair do not contain enough melanin to absorb light). Another pigment – haemoglobin – is found in blood. The third substance in the skin that absorbs light is water.

When the pigment absorbs the light it converts it into heat. This is the same principle that makes a black car hot to the touch in summer. Unlike the black car, melanin, haemoglobin and water are selective in the light they absorb. They only absorb a certain band of wavelengths. This band is called the absorption spectrum.

Ellipse uses light (carefully controlled and carefully filtered light within the absorption spectrum) to target the pigment that is causing your problem. For hair removal or brown marks on the skin, the target is melanin. For treatment of vascular problems and acne, the target is haemoglobin. In treating sun-damaged skin, both melanin and haemoglobin may be targeted.

A very short pulse of light (only a few thousandths of a second) hits the target and causes it to heat up. Because the light is so carefully controlled, only the target is damaged – the surrounding skin and the water in the skin are not harmed. When the melanin or haemoglobin in the treatment area is “hit” by Ellipse, the root of the problem, so to speak, disappears.



The absorption spectrum of the skin's natural chromophores – Ellipse treatment does not use wavelengths absorbed by water (infrared light).

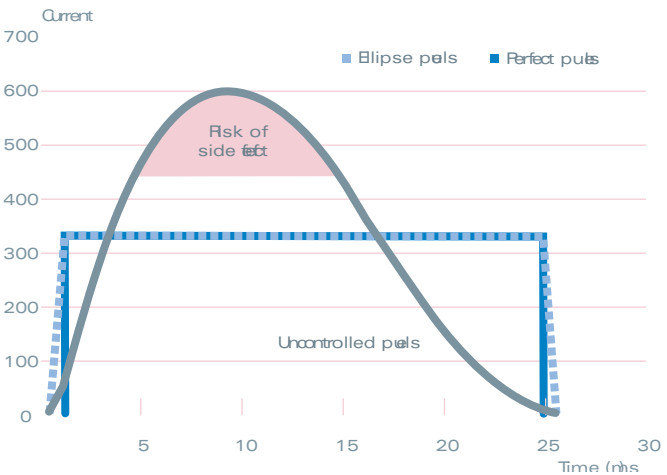
### **Why are energy and pulses important?**

The idea behind Ellipse is called Selective Photothermolysis. This means carefully changing light energy into heat energy. The amount of energy is important, as we need to make sure that we hit our target (for example hair, or a small blood vessel or a brown mark) with just the right amount of energy to get the desired result without damaging the surrounding tissue.

### **How can I be sure Ellipse is safe and effective?**

Clinical trials documenting Ellipse's safety and effectiveness are carried out by leading doctors prior to the release of the product. The results of these tests are then published in respected, refereed medical journals. You are welcome to view these scientific papers on the Ellipse website at [www.ellipse.org](http://www.ellipse.org). The settings used for your treatment will be based on the settings recommended by the clinicians who carried out the clinical trials.

The pulse time is also important because it controls how quickly the energy is delivered. The size and colour of the targets determine how quickly they heat up and cool down again (a big cup of coffee stays warm longer than a small cup), and the pulse is carefully selected to match the selected target.



Eclipse offers a controlled pulse – safe and effective.

Unlike many other products on the market, Ellipse carefully controls the amount of energy and the pulse so that the best possible result is obtained. Low cost equipment does not control the pulse, meaning the energy your body receives can vary during the lifetime of the pulse. Worst case, this can result in side effects such as burning. Ellipse controls the pulse, and delivers the desired energy in the optimal waveband for the treatment. These factors explain why Ellipse has been clinically proven to be safe and effective – proved also in millions of treatments.

### **What are the treatment possibilities?**

The light that is absorbed by melanin and haemoglobin is absorbed within a few millimetres of the surface of the skin. The skin is made up of three main layers, and only hair, blood vessels and melanin that are located close to the skin surface can be treated. Fortunately, this distance allows the Ellipse I<sup>2</sup>PL system to treat many of the most common and most annoying skin problems:

- Removal of excess hair on any part of the body
- Vascular lesions: thread veins, port wine stains
- Acne
- Pigmented lesions: brown pigment marks, such as freckles, age spots
- Sun-damaged skin

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Ellipse A/S a producer of light-based solutions for medical and cosmetic conditions. Ellipse has gained the acclaim of doctors and beauticians worldwide for the quality of products and services.

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