

THE SCIENCE OF PLASMA PEN

An Experts Guide To Plasma From Louise Walsh International



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WHY DO WE NEED PLASMA PEN?



Just like the scaffolding of a building then, over time, it will begin to weaken and rust, it will lose its flexibility and strength and, increasingly it will become unable to bear the load it was originally designed to support. It will eventually buckle, sag and collapse.

This is similar to what occurs in our skin.

As we age, the scaffolding of our skin deteriorates and this causes it to wrinkle and sag. Our dermal layer thins, we produce less and less collagen, we lose laxity and texture and the elastin that underpins our skin's elasticity (not least by cross-linking with collagen - like the brackets on a scaffolding) begin to wear out, deform and 'slide' over the collagen fibrils. This prevents them from maintaining a solid structure.

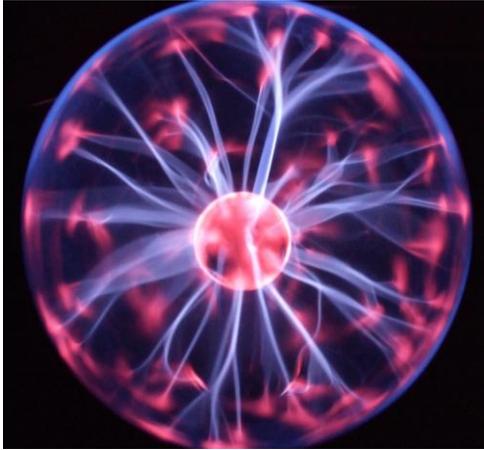
WHAT CAN PLASMA PEN DO?

Our device delivers soft-surgery plasma fibroblasting with stunning, long lasting and completely natural looking results. It is entirely designed to dramatically repair, reverse and mitigate all the negative effects of ageing by blending our state-of-the-art nitrogen plasma technology with hard science, sophisticated technique, best practice, elite training, world class consultations and the very best pre and post treatment products and aftercare.

Very simply, our plasma is able to significantly tighten, lift, resurface, rejuvenate and regenerate practically any area of the skin. It is a cost-effective and highly compelling alternative to all other medi-aesthetic procedures you may know - including injectables, fillers, microneedling, laser, mesotherapy, dermabrasion and chemabrasion and most (if not all) cosmetic surgery procedures.



WHAT IS PLASMA?



Plasma is often described as the fourth state of matter after solids, liquids and gas but it is actually more akin to a gas. Unlike ordinary neutral gases however; plasma is made up of positively charged and ionised atoms/molecules which are able to roam freely and fast. For plasma to even exist, ionisation of the molecules is necessary.

Plasma gas is able to do things that ordinary gases simply cannot do such as conduct electricity, create magnetic fields and enable electrostatic interactions. Plasma gases exhibit coherent, collective qualities that neutral gases don't and this makes them dynamic yet very controllable.

You may not realise it but we see plasma all the time - fluorescent light bulbs and neon signs are both good examples of plasma gas in action. Plasma TV's are another good example and in their case, a gas such as argon is injected between two glass panels and an electrical current is then passed through that gas which enables it to glow and emit specific colours. Plasma globes use an electric current to ionise the gas inside and produce coloured lightning. The science behind plasma goes back over a century to people like Tesla so we didn't invent it and we weren't the first ones to commercialise it either. We have however perfected it.

HOW DOES OUR DEVICE CREATE PLASMA?

The external intermediary we use to convert electric energy from within our device is what is known as gaseous "diatomic molecular nitrogen". Diatomic molecules are composed of only two atoms which in our case are oxygen and nitrogen. We administer that energy in its gaseous form (nitrogen plasma) and we transmit that energised gas in a non-contact way to the skin's surface from above.

The internal intermediary we use to create the plasma is our handpiece which converts electrical energy by way of a "dielectric-barrier discharge" (the electrical discharge that is made by introducing voltage between two electrodes which are separated by an insulating dielectric barrier). This electrical discharge is transmitted to our 0.2mm and 0.4mm nano-probes by impulse. A gaseous flash/arc of ionised plasma is safely discharged about 1mm above the skin. This all occurs within millionths of a second in a highly controlled and on-demand fashion.



WHAT DOES THE PLASMA ACTUALLY DO?

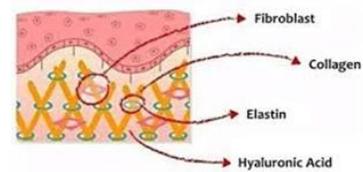


The nitrogen plasma energy that we create transfers rapidly to the skin's epidermal layer whilst, simultaneously, heating and disrupting the deeper dermal structure via thermal conduction.

In doing so, we intentionally create a dual zone of micro-trauma which comprises of a superficial zone of outer thermal micro-damage to the epidermis and then, simultaneously, a deeper zone of inner thermal modification in the dermis – especially to the fibroblasts. That's why we often call the treatment "fibroblasting".

WHAT ARE FIBROBLASTS?

Fibroblasts are the most common cells of connective tissue in the body and the only cells that can make Type III collagen. Type III collagen synthesis into tougher Type I collagen over a period of about 3 months. Type I collagen is what provides the strength in our skin's dense connective tissues and it is the end product of our tissue healing by repair.



Most fibroblasts are inactive and are actually called fibrocytes. These fibrocytes will rarely undergo cell division and will not produce collagen unless they are specifically re-activated by a wound healing process or inflammatory response. We do precisely that.

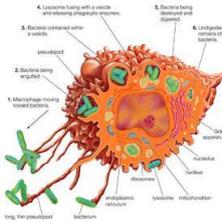
WHAT IS THE HEALING PROCESS?



"Neoepithelialisation" - the formation of new epithelial tissue - becomes visible as tiny carbon crusts which desquamate (flake off) within the framework of aftercare. This occurs rapidly after a Plasma Pen treatment and is usually complete within 3 to 7 days post-procedure. These carbon crusts serve as a natural and protective biological dressing and flake off naturally as the newly formed and rejuvenated "neoepidermis" appears.

Plasma Pen is the gift that keeps giving because, parallel to the rapid formation of new epithelial tissue (which constitutes the superficial healing process), our nitrogen plasma treatment initiates a comprehensive healing response over the coming 12 weeks. This healing process is best characterised by extensive dermal remodelling that includes neocollagenesis (new collagen synthesis), neoelastogenesis (the production of elastin), cross-linking between collagen and elastin fibrils and the reversal of elastotic change (the premature degeneration of dermal elastic tissue due to age, prolonged exposure to sunlight, glycation and many other factors).

WHAT ELSE OCCURS DURING HEALING?



The inflammatory response which occurs during the healing process that we stimulate during fibroblasting also activates “M2 Macrophages”. These are white blood cells that engulf and digest cellular debris and decrease the inflammation we cause. We also stimulate the migration of “basal keratinocytes” to the surface of the skin. Wounds to our skin are repaired, in part, by the migration of keratinocytes from the basal layer of the skin and they help fill in the gaps created by the micro-trauma we create.

Many other exciting things happen parallel to this such as “neovascularisation” which is the formation of new blood vessels and the release of growth factors. These growth factors include “cytokines” which are small proteins that are very important in cell signalling and which help modulate our immune response, cell aging & the growth of new cells. They’re particularly important in directing our bodies response to the inflammation that we intentionally cause with Plasma Pen by stimulating cell repair and new cell production.

HOW IS PLASMA PEN DIFFERENT TO LASER?

Unlike laser treatment, the interaction of our nitrogen plasma with tissue is non-chromophore dependent. This means that it is not reliant on interacting with chromophores which are the parts of our molecules responsible for colour. Instead, we deliver completely predictable and fully controlled energy to the skin’s architecture and we thus avoid the excessive collateral thermal injury which is often associated with ablative and chromophore dependent laser tissue interaction.



In further contrast to lasers and ablation; our treatment is completely uniform, it does not damage surrounding tissue and the architecture of the skin remains fully intact immediately after our nitrogen plasma treatment is delivered. There’s also no open wound.

WHAT ARE THE MAIN CLINICAL OUTCOMES?



The main clinical outcomes of our treatment are:

- (1) A dramatic reduction of photoageing and superficial wrinkles (rhytids)
- (2) The partial-to-complete elimination of medium-depth wrinkles
- (3) Spectacular skin tightening, lifting and rejuvenation
- (4) A marked improvement and softening of deep wrinkles.

All these positive changes we make with our device underpin future tissue stability (homeostasis).

ARE THERE ANY NEGATIVES?



Ultimately, our plasma treatment is supremely effective and consistent. There are little or no untoward effects, a huge array of treatment applications are available on top of facial rejuvenation procedures (including the safe and easy removal of skin blemishes and skin tags, the ability to reduce or soften scars, techniques for improving existing pigmentation and much more).

Unlike treatments such as microneedling; there is no blood, there are no open wounds and we benefit from a unique ability to always work at a predictable depth of tissue injury. Dovetailing this with our exclusive nano-probes and our consistent, on-demand plasma delivery helps underscore a rapid healing process with minimal downtime, rapid recovery and long-lasting results of around 3 years (with many effects permanent).

HOW DOES PLASMA PEN COMPARE TO COSMETIC SURGERY AND ALL OTHER MEDI-AESTHETIC TREATMENTS?

1. Plasma Pen is the only treatment outside of plastic surgery which can be performed on the eyelids (non-surgical blepharoplasty). With our device, our technicians are actually able to perform most cosmetic surgery procedures with similar effects (from facelifts to jawline augmentations to neck lifts to non-surgical rhinoplasty and beyond) but all in a completely non-surgical and non-invasive way.
2. You only have to study the dozens of major clinical trials directed by plastic surgeons to see they all agree combining plasma treatment with full aesthetic facial surgery can dramatically enhance their own surgical procedures - especially for the forehead, periorbital, midface, perioral and lowerface regions. Plasma Pen often mitigates the need for them at all.
3. With nitrogen plasma treatment there is no blood, no scalpels, no cutting of the skin, no stitches and suturing, no scars, no heavy ablation, no excessive collateral thermal injury and no injectable anaesthetic required. It is an incredibly low-risk, multi-faceted and highly versatile procedure with no risk of surgical complications, minimal side-effects, little or no pain, very short downtimes, rapid recovery and high-impact, natural looking results that last for around 3 years.
4. In using plasma there is no thinning of the skin, it is much more uniform than ablative resurfacing using lasers, it injures tissue precisely and in a far more predictable manner than dermabrasion or chemabrasion and there are no asymmetries or over-corrections. Unlike laser (where the orientation of new collagen is parallel to the surface of the skin), the collagen fibres formed by plasma line up perpendicular to the skin's surface which is their normal and most optimal orientation. Plasma is also non-chromophore dependent.
5. Most medi-aesthetic treatments only target either the muscle or epidermal tissue whereas Plasma Pen treats both the epidermal and dermal tissue in combination to dramatic effect. It leaves very natural and younger looking skin unlike laser treatments and chemical peels which can often leave the skin thinner, very light, pigmented and/or too shiny.
6. Best of all, Plasma Pen treatment delivers enormous cost savings and a raft of tangible, unique and highly desirable benefits compared to all the other alternatives.

CONTACT

Plasma Pen by Louise Walsh International	Global HQ & Flagship Training Academy	
42-46 Station Road, Ainsdale, Southport, PR8 3HW United Kingdom	info@plasmapenuk.com	
www.plasmapenuk.com	Tweet @PlasmaPen	www.facebook.com/LouiseWalshPlasmaPen
+44 (0)1704 579 800	Company number: 10439998	VAT number: 254213335

