

New Generation of RF Microneedling Advancing Safety and Efficacy in Skin Rejuvenation

With proved safety and efficacy documented in 25 publications, the **SYLFIRM X** fractional RF microneedling device treats all skin layers — epidermis, basement membrane and dermis, and is **the only FDA-registered pulsed and continuous wave technology on the market**. The PW (pulsed wave) mode features a short pulse duration unique to the SYLFIRM X, is specifically designed to address smaller structures like pigmentation and veins. A depth of 300 microns is also available to treat the basement membrane, which plays a key role in aging skin. The CW (continuous wave) can treat the deeper dermis and is ideal collagen remodeling. The SYLFIRM X is well-suited for the improvement of vascular and pigmentation, skin laxity, skin tone and texture, scars, fine lines and wrinkles and overall skin rejuvenation.

INTRODUCTION

Microneedling is a process through which very small needles are inserted into the skin layers at prearranged depths causing micro-injury to the dermis. Radiofrequency (or RF) microneedling uses high-frequency energy, inducing a thermal reaction in targeted tissues with patterns corresponding to the resistance or impedance of the tissue. RF energy can be emitted into the skin in either monopolar mode that utilizes an active electrode and a grounded electrode or via a bipolar mode that employs two active electrodes.⁽¹⁾ In monopolar modes, current flows through the patient's body while bipolar RF energy is delivery in between the placement of electrodes around the regionally-targeted tissues.^{(1) (2)} The heat from the RF energy induces a thermal response stimulating a heating cascade resulting in tissue coagulation and collagen production.⁽³⁾

Because the epidermal layer is minimally disrupted, RF Microneedling affords a relatively small recovery time compared to other ablative or resurfacing techniques and is ideal for skin revitalization, acne scars, fine lines and wrinkles, skin tone and texture.

MICRONEEDLING EXPANDS INDICATIONS, INCREASES SAFETY

SYLFIRM X, the newest generation of fractional RF Microneedling with proved safety and efficacy documented in 25 publications treats all skin layers — epidermis, basement membrane and dermis on all skin types. The PW (pulsed wave) mode features a short pulse duration from 30 msec to 80 msec, addressing smaller structures like pigmentation and veins.^{(4) (5)}

The CW (continuous wave) is designed to deposit energy into deeper dermal tissue. The pulse durations must be specifically designed to deliver a fractional treatment by containing the

before


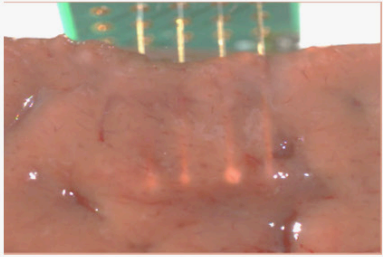
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heat around the treatment needles. An extensive study by Na and colleagues, demonstrated that varying needle insertion depth and conduction time induced coagulation columns were carefully noted via histologic examination. In order to provide a safe and effective fractional treatment and to contain the deposition of energy around the microneedle and preserve the surrounding tissue from excessive heat, the pulse duration and energy deposition must not exceed 300 msec.⁽⁶⁾

SYLFIRM X CW mode features a range of selectable pulse durations or conduction times from 120, 200 and 300 msec. In addition, the study investigated the role of bipolar non-insulated needles and showed that bipolar needles found in SYLFIRM X allow precise control of energy deposition around each needle improving the safety profile of the system.

The system's patented needle technology allows energy to flow to the tip of the bipolar needle and radiate upward to below 300 μ m from the end of the needle. The energy rises up during the pulse duration and diminishes into the papillary dermis without impact on the epidermal/dermal junction, allowing energy to be delivered throughout the skin layer for a fuller dermis reaction in a single pulse period, resulting in desired coagulation columns virtually eliminating pinpoint bleeding. The ability to deposit heat through the length of the

Non-insulated electrodes	Insulated electrodes
 <ul style="list-style-type: none"> • Complete coagulation in total dermal layer • Strong immediate contraction of old collagen fibers and long-term neocollagenesis in total dermal layer • No thermal damage in epidermis • No bleeding • No downtime 	 <ul style="list-style-type: none"> • Partial coagulation around the end of tip • Neocollagenesis in partial dermal layer • Bleeding • Relatively longer downtime

needle allows the provider to cover greater area density in a single pulse.

Conversely, insulated microneedles have a layer of insulation around them, allowing the heat to be emitted only from the end tip, heating just the lower layers of the skin. (see above illustration.) With insulated needles on other RF systems, the energy is delivered to the tip of the needle and with minimal energy radiating through the needle, creating minimal collagen remodeling. The insulated needle therapy requires multiple passes at varying depths and can increase treatment times and discomfort for the patient.

The needle depth can be adjusted from 300 µm in the PW mode to address pigment and veins as well as the basement membrane and from 0.5-4.0 mm, resulting in ideal collagen remodeling in the dermal layer utilizing a single tip. The SYLFIRM X is well-suited for the treatment of all skin types.

With eight preset modes, the system is easy to use, easy to delegate and the robotic motorized needles decrease patient discomfort.

CONCLUSION

The dual pulse durations, PW and CW, allow the practitioner to target small blemishes, like redness and diffused pigment, as well as fine lines and wrinkles, scars, skin tone and texture with the same device. The combination of requiring a single tip to reach the entire depth of



the epidermal dermal layer and its relative ease of use, make SYLFIRM X a versatile and superior system for any practice. ■

References

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