

# SYLFIRM X

DUAL WAVE RF MICRONEEDLING SYSTEM



# SYLFIRM X

ULTIMATE EDITION



Minimally  
Invasive



Short  
Treatment Time



Minimal  
Downtime



Safe &  
Comfortable



Immediate  
Results

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## DUAL WAVE RF MICRO NEEDLING SYSTEM

### PULSED WAVE (PW) & CONTINUOUS WAVE (CW)

The world's first & only FDA registered Pulsed Wave (PW) and Continuous Wave (CW) Radio Frequency Micro Needling device featuring 300 Micron depth targeting both skin laxity and pigmentation for ultimate skin rejuvenation. Sylfirm X with its 8 different PW/CW modes has proven its effectiveness and safety through 25+ clinical studies and experiments.

*Disclaimer :*

*SYLFIRM X Ultimate Edition™ is intended for use in dermatology and general surgical procedures for electrocoagulation and hemostasis. (K200185)*

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## BIPOLAR NON-INSULATED ELECTRODE SYSTEM

SYLFIRM X adopted bipolar non-insulated micro needle electrodes to cover all dermal layers with uniform electric field and maximize the treatment result specifically for vascular pigmentation during the Pulsed Wave (PW) modes, and skin revitalization during the Continuous Wave (CW) modes.

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## 300 $\mu$ m TREATMENT

SYLFIRM X enables the treatment by targeting the papillary dermis layer by adjusting the needle depth in the range of 0.3 to 4.0 mm. It does not require applying anesthetic cream during the procedure as it is less painful, and it helps patients' quick return to daily life.

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As a specialist in researching and developing medical device technologies, Viol, the manufacturer of Sylfirm X, is committing their finest effort to deliver the new solutions in clinical treatment. With Viol's bio-electro technologies and products, we believe our customers can enjoy the beauty of the healthier and richer life.

DESIGN SPECIFICATION

# AESTHETIC & INTELLIGENT DESIGN

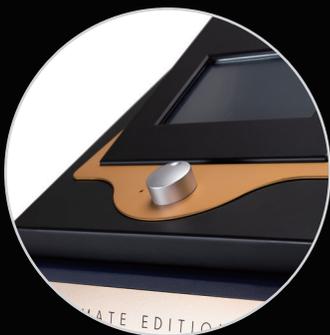


- **Ergonomic handle**  
Comfortable for treatment use
- **Tip base designed to maximize treatment precision**

- **Extended stand length**  
Increase ease of use



- **Ease of mobility**



- **Locking wheel mechanism**
- **User-friendly interface**



- **Magnetic foot switch**
- **Signal controller**

SYLFIRM X IS

# CLINICALLY PROVEN

Dr. JongJu Na



The phenomenon as independent electro thermal tissue coagulation around each electrode of bipolar radiofrequency

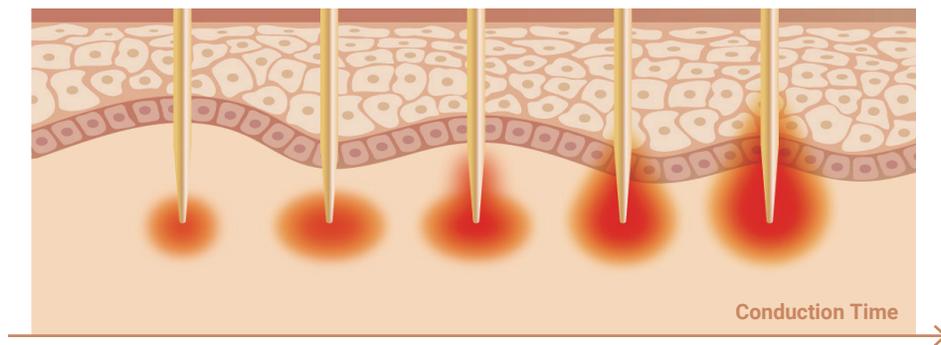


Minimal downtime. Little to no pain.

## Na Effect

In 2015, ViOL's founder, Dr. Jung Ju Na, conducted a clinical study to observe the skin response to alternating current bipolar RF energy through non-insulated microneedles.

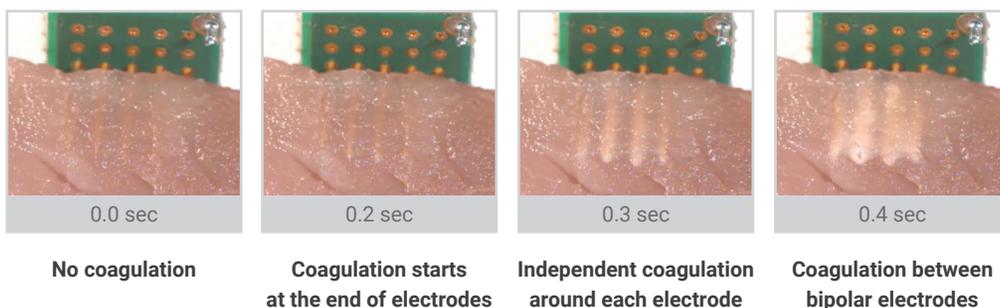
When bipolar RF energy is released through a non-insulated microneedle, tissue coagulation begins at each end of the microneedle electrode, and then forms a droplet or cocoon shape as conduction time increases, showing less thermal effect on the epidermis. This is called the "NA EFFECT".



Complete coagulation in total dermal layer

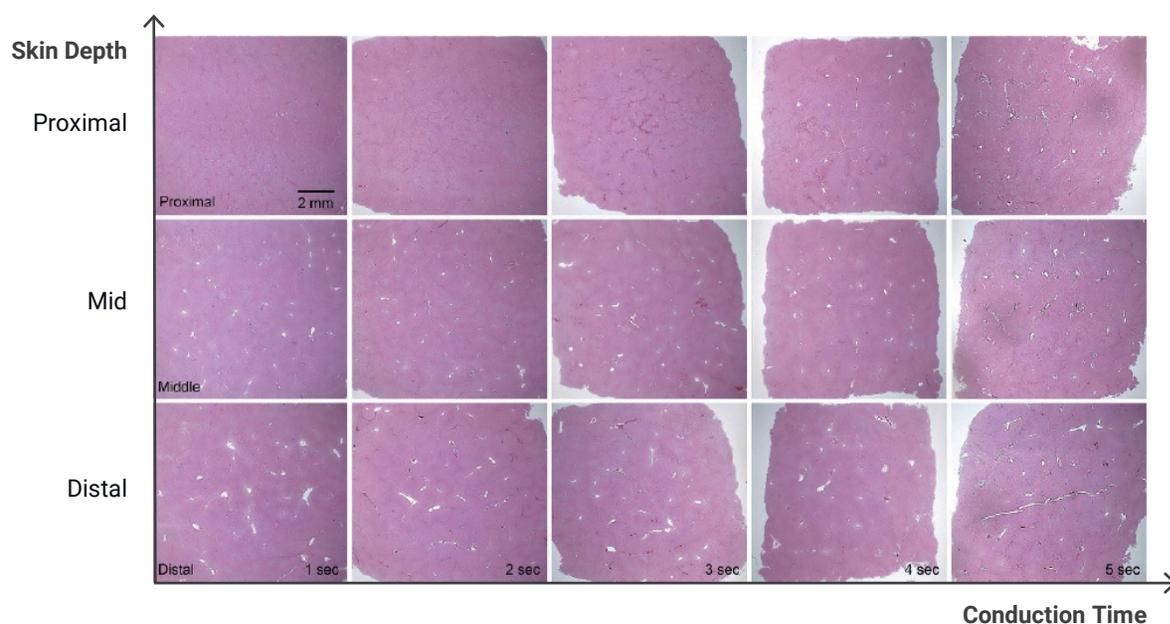
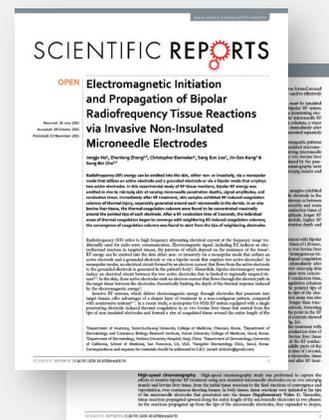
The primary takeaway of the "Na effect" is that it maximizes the thermal effect on the target with little to no epidermal damage, enabling effective and safe treatment.

< 0.3 sec: Tissue reactions were initiated at the tips of the microneedle electrodes. As the reactions propagated up from the tips of the microneedle electrodes, they expanded to deeper, wider, and higher areas around the microneedle. After a brief delay, the reactions continued to move upward around the body of the microneedle electrode and expand laterally.



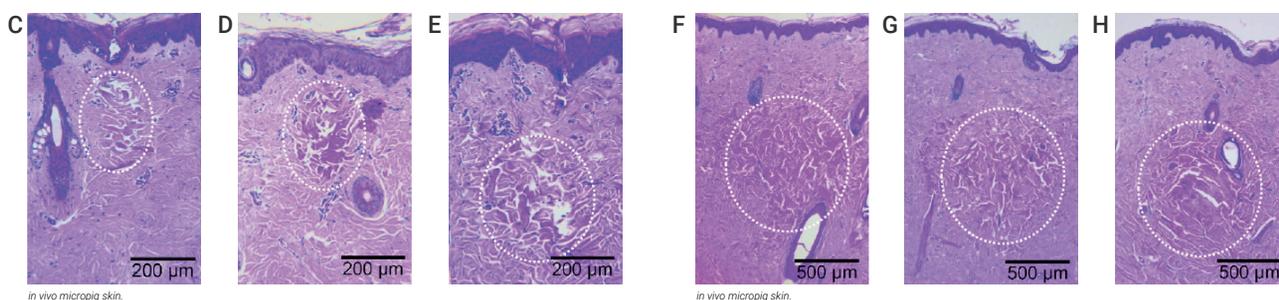
# Electromagnetic Initiation and Propagation of Bipolar Radiofrequency Tissue Reactions via Invasive Non-Insulated Microneedle Electrodes

Jongju Na, Zhenlong Zheng, Christopher Dannaker, Sang Eun Lee, Jin-Soo Kang & Sung Bin Cho



**Figure 3. Horizontal sections of the ex vivo bovine liver tissue.**

Disposable tips used by the bipolar RF device comprise 25 invasive non-insulated electrodes arranged in a 5 X 5 pattern. (c) Tissue sections of bovine liver were obtained after RF treatment with a penetration depth of 3.0mm a signal amplitude of 36.6V. Remarkable carbonization is observed along the distal ends of penetrating electrodes after 1 second of RF conduction. Along the middle of the electrodes, tissue coagulation is visible at the conduction time of 1 second, and remarkable carbonization seems to develop after 3 seconds. At the proximal ends of the electrodes, distinguishable congestion of vascular structures is observed on the specimens treated over RF conduction times of 2 and 3 seconds. Coagulation along superficial portions of the ex vivo bone liver tissue is found after RF treatment with a conduction time of 4 seconds, while remarkable carbonization appears after the conduction time of 5 seconds. H&E stain.



The longer RF conduction time created a larger area of coagulation in the dermis at the same penetration depth and amplitude of the RF signal, (c)120ms, (d)200ms, (e)300ms.

Higher energy generated more degrees of tissue destruction at the same microneedle penetration depth and RF conduction time, (f)29.5V, (g)32.6V, (h)35.6V.

# PW MODE

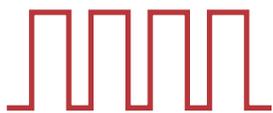
## Pulsed Wave Mode

Vascular Pigmentation

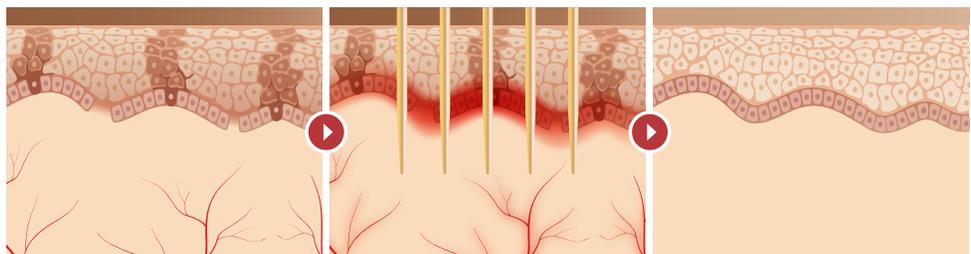


## Selective Thermal Effect for Basement Membrane & Blood Vessel

- Pulsed wave irradiates RF energy in the form of multiple pulses.
- It's selectively affected highly conductive tissues such as microvascular components, small blood vessels, or basement membrane with no noticeable effect on surrounding tissue



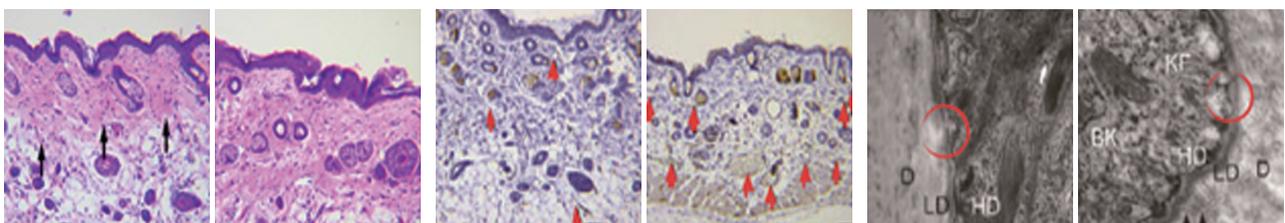
Multiple Short Pulses



Melasma/redness occur due to weakening of basement membrane & increase of abnormal blood vessels

Selectively generate heat to the weakened basement membrane & abnormal blood vessels

By curing the underlying cause, help melasma/redness as well as improve skin tone



Reference 1 Efficacy of Pulsed Wave Needle RF on Skin

Mode	PW1	PW2	PW3	PW4
Wave Form				
Pulse Duration	30 msec	40 msec	50 msec	60 msec

### Reference

- [a] Senescent Fibroblasts Drive Aging Pigmentation: A Potential Therapeutic Target for Senile Lentigo. *Theranostics* 2018, Vol. 8, Issue 17  
[b] Senescent Fibroblasts in Melasma Pathophysiology. *Experimental Dermatology*. 2018;1-4.



# CW MODE

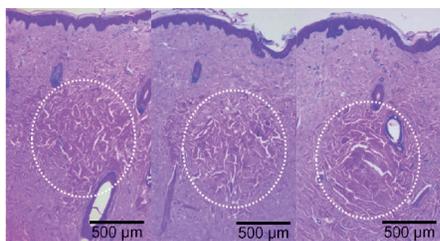
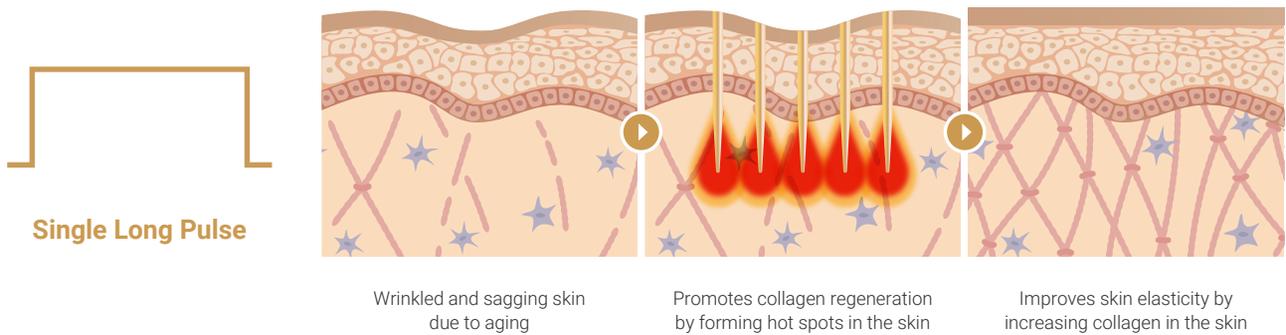
## Continuous Wave Mode

Skin Rejuvenation

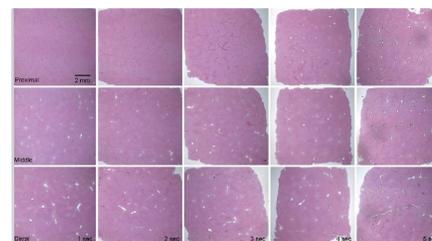


### Thermal Coagulation, 'Na effect' for Total Dermal Layer

- CW mode creates wide, independent coagulation around each electrode.
- The coagulation area continues from deeper dermis to upper dermis with one penetration.
- Promising optimal skin rejuvenation, for a firmer, more youthful looking appearance.



Reference 2  
**Thermal coagulation at the target depth**



Reference 2  
**Safety of non-insulated needle**

Mode	CW1	CW2	CW3	CW4
Wave Form				
Pulse Duration	120 msec	160 msec	200 msec	300 msec

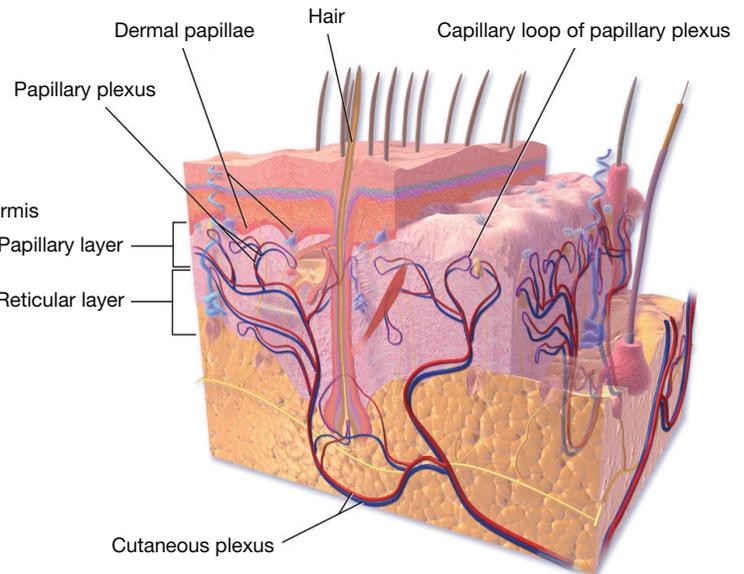
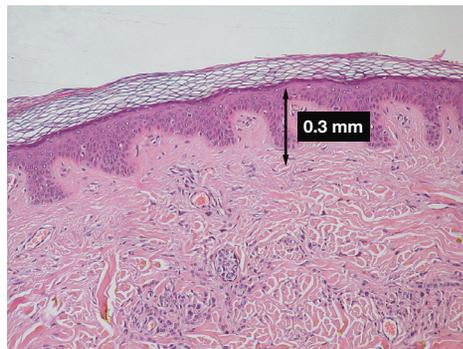
Reference

2. [a] Electromagnetic Initiation and Propagation of Bipolar Radio frequency Tissue Reactions via Invasive Non-Insulated. [b] Micro needle Electrodes. Sci Rep. 2015; 5; 16735. [c] Clinical Study of Facial Wrinkle Treatment with Fractional Micro needle Radio Frequency System. Med Laser 2014;3(2):59-64

## At 300 $\mu\text{m}$ , Papillary Dermis

Papillary dermis is located just below the basement membrane at a skin depth 300  $\mu\text{m}$ . It contains factors associated with pigmented lesions, vascular lesions and skin rejuvenation such as senescent fibroblasts, capillaries and blood vessels, and type III collagen. The 300  $\mu\text{m}$  targeted treatment can effectively treat melasma, diffuse redness, rosacea, uneven skin tone and texture, with less pain and less downtime. [a]

### Skin Layer [b]



#### Reference

[a] Sorrell, J. M. & Caplan, A. I. (2004). Fibroblast heterogeneity: more than skin deep. *Journal of Cell Science*, 117-667-675.

[b] Illustration of Dermal Circulation and Layers by Wikipedia

## 300 $\mu\text{m}$ Targeted Treatment With SYLFIRM X

Little to no pain and anesthesia-free treatment

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### Optimal Skin Rejuvenating Depth

Papillary Dermis contains collagen factors, especially Type III collagen. Compared with older adults, the distribution of Type III collagen in the fetus's skin is higher than that of Type I. Also Type III collagen is present more in papillary dermis than reticular dermis. The density of type III collagen increased after 300 $\mu\text{m}$  targeted treatment with Sylfirm X.

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### Regulation of Hyperactive Melanocytes

The senescent fibroblasts, which stimulate melanogenesis, are more distributed in the melasma lesion than in the perilesional area, and more in the papillary dermis than in the reticular dermis. 300  $\mu\text{m}$  targeted treatment helps to repair senescent fibroblasts, which promote melanin production, and strengthens the basement membrane to improve melasma.

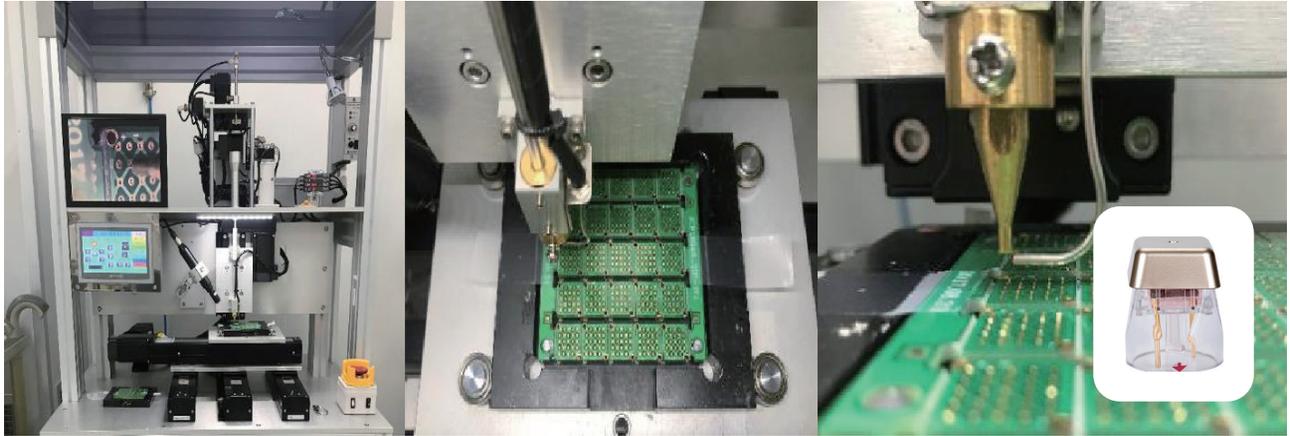
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### Anesthesia-Free Treatment

- 300 $\mu\text{m}$  targeted treatment minimizes nerve contact to reduce pain and it enables the treatment without anesthetic cream
- 10 minutes of treatment time (takes 30-40 minutes if applying anesthetic cream)
- Allow patients' quick return to daily life with its short downtime

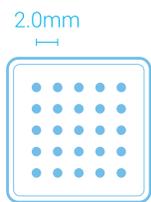
# Elaborately Manufactured Needle Tip

The micro needles are precisely produced by the robotic system, which brings evenly-leveled electrodes to penetrate an accurate target depth during the treatment.



## SYLFIRM X Tips

- 4 different tip options to choose from for specific treatment.
- New tips provide increased visibility and tip-to-skin contact during treatment.
- Non-insulated electrodes with 'Na Effect' deliver maximum effect with less pain and downtime.



**X-25 TIP**  
5\*5(25pin)



Full Face



**XE-25 TIP**  
5\*5(25pin)



Full Face  
Peri-orbital  
Philtrum



**XA-25 TIP**  
5\*5(25pin)



Acne Vulgaris  
Acne Scar  
Scar  
Syringoma



**XW-18 TIP**  
3\*6(18pin)

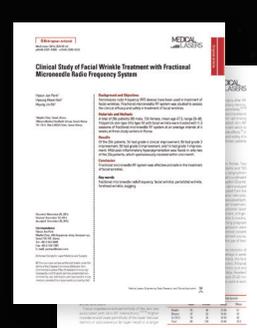
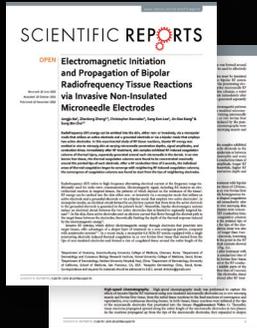


Stretch Mark  
Deep Wrinkle  
Deep Scar  
Eye Bag



PROVEN BY

# 25+ CLINICAL PAPERS



If you would like to have further information on the above published articles of Sylfirm X, please contact via email or visit our website presented.

[info@scarletrf.com](mailto:info@scarletrf.com) / [www.viol.co.kr](http://www.viol.co.kr)



## Clinical articles based on Viol's RF microneedling technology

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- Na Effect\_2015\_Electromagnetic Initiation and Propagation of Bipolar Radiofrequency Tissue Reactions via Invasive Non-Insulated Microneedle Electrodes
- PW\_Pigmented Lesion\_2015\_Successful Treatment of Refractory Melasma Using Invasive Micro-Pulsed Electric Signal Device.
- PW\_Pigmented Lesion\_2017\_Periorbital melasma - Hierarchical cluster analysis of clinical features in Asian patients
- PW\_Pigmented Lesion\_2017\_Therapeutic Efficacy and Safety of Invasive Pulsed-Type Bipolar Alternating Current Radiofrequency on Melasma and Rebound Hyperpigmentation
- PW\_Pigmented Lesion\_2018\_Senescent fibroblasts drive ageing pigmentation A potential therapeutic target for senile lentigo
- PW\_Pigmented Lesion\_2018\_Senescent fibroblasts in melasma pathophysiology
- PW\_Pigmented Lesion\_2022\_Therapeutic effects of new pulsed-type microneedling radiofrequency for refractory facial pigmentary disorders
- PW\_Rejuvenation\_2016\_Improvement of Periorbital Wrinkles Treated with an Invasive
- PW\_Scar\_2018\_Adjuvant Therapy for Revision Rhinoplasty of Contracted Nose Using Polydeoxyribonucleotide and Invasive Bipolar Radiofrequency
- PW\_Skin Reaction\_2016\_High-Frequency Alternating Electrical Current Selective
- PW\_Skin Reaction\_2018\_In vivo skin reactions from pulsed-type, bipolar, alternating current radiofrequency treatment using invasive noninsulated electrodes.
- PW\_Vascular Lesion\_2021\_Therapeutic effects of a new invasive pulsed type bipolar radiofrequency for facial erythema associated with acne vulgaris and rosacea
- PW\_Vascular\_Lesion\_2017\_Invasive Pulsed-Type, Bipolar, Alternating Current Radiofrequency Treatment Using Microneedle Electrodes for Nasal Rosacea
- 300 Micron\_2021\_Synergistic effect of 300um needle-depth fractional microneedling radiofrequency on the treatment of senescence-induced aging hyperpigmentation of the skin
- CW\_Acne\_2012\_Use of Fractionated Microneedle Radiofrequency for the Treatment of Inflammatory Acne Vulgaris in 18 Korean Patients
- CW\_Acne\_2015\_The Efficacy and Safety of Bipolar Radiofrequency Treatment with Non-Insulated Penetrating Microneedles For Acne Vulgaris And Acne Scars
- CW\_Acne\_2020\_Safety of Combined Fractional Microneedle Radiofrequency and CO2 as an Early Intervention for Inflammatory Acne and Scarring Treated with Concomitant Isotretinoin
- CW\_Rejuvenation\_2012\_Skin Rejuvenation by Microneedle Fractional Radiofrequency Treatment in Asian Skin - Clinical and Histological Analysis
- CW\_Rejuvenation\_2013\_Skin rejuvenation by microneedle fractional radiofrequency and a human stem cell conditioned medium in Asian skin
- CW\_Rejuvenation\_2014\_Clinical Study of Facial Wrinkle Treatment with Fractional Microneedle Radio Frequency System



WEBSITE



FACEBOOK



INSTAGRAM

# SYLFIRM<sup>X</sup>

ULTIMATE EDITION



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