

# Characterization of the Histologic Changes in the Skin from Treatment with a 755 nm Picosecond Alexandrite Laser with a Diffractive Lens Array (DLA) Optic

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## Study Design:

- 755 nm picosecond alexandrite with a DLA optic at three energy settings to treat in-vivo and ex-vivo skin.
- Post-treatment, the patients and skin samples were evaluated with a confocal microscope followed by biopsies and histology.

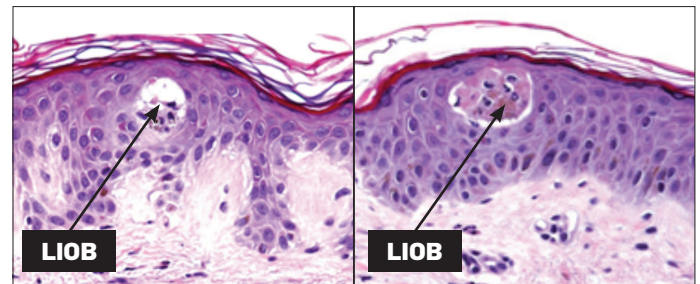
## Results

- Histology revealed unique intra-epidermal cavities.
- Number, density, and size of cavities was dependent on the melanin index (MI) and delivered energy when evaluated with histopathology analysis and confocal microscope.
- Microscopic Epidermal Necrotic Debris (MEND) zones formed after treatment and exfoliated over a 3 week period.

## Conclusion

- Intra-epidermal cavities result from an area of Laser Induced Optical Breakdown (LIOB). This injury is most consistent with a localized plasma formation in the epidermis initiated by the absorption of the high energy Picosecond light by melanin. Treatments with this device and DLA optic may result in improvements in dys-pigmentation, fine lines and acne scars with new collagen and elastin. The production of this LIOB could directly stimulate an epidermal repair mechanism.

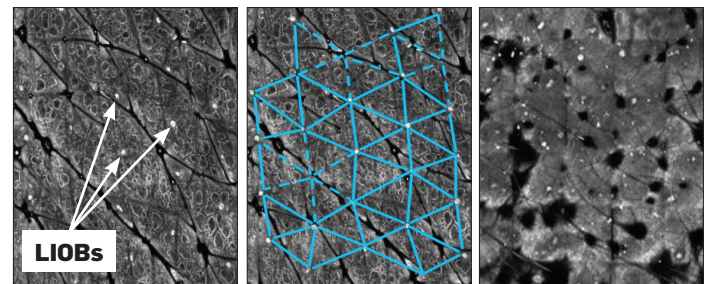
Histology images showing intra-epidermal LIOBs



24 hours post ; 0.71J/cm<sup>2</sup>  
Patient A with MI: 17

24 hours post ; 0.71J/cm<sup>2</sup>  
Patient B with MI: 31

Confocal Microscope showing LIOBs



LIOBs (1 pulse)

LIOBs (1 pulse)

LIOBs (multiple pulses  
with ~3 passes)

