

DUAL-WAVELENGTH

LED PHOTO THERAPY

FOR FACE TREATMENTS

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HI-LIGHT

- The phototherapy device is designed to be curvaceously sized to suit the face shape of Asian people.
- The LED photo therapy device emitted 633 ± 5 nm red and 415 ± 5 nm blue light with a linear adjustable light power density of $0-18.56$ mW/cm² and $0-3.70$ mW/cm².
- Easy access by human machine interface module with touch screen command.
- The uniformity and stability of light spectrum more than 87.6%.

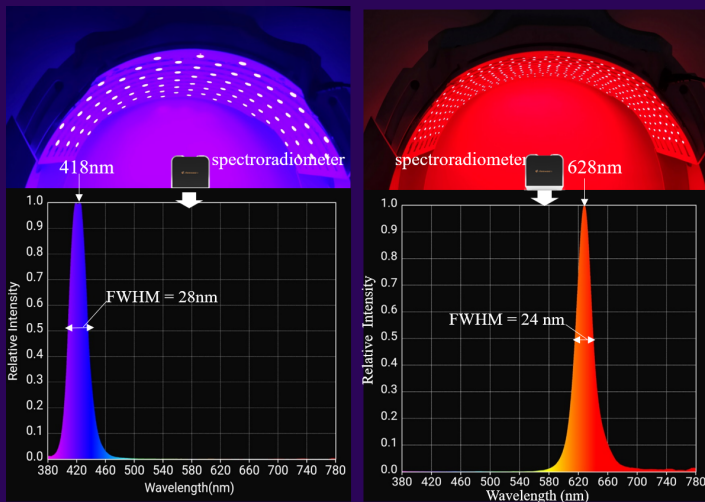


Fig 1. Spectral irradiance of the LLLT dual-wavelength LED phototherapy

UTILIZATION

- IT CAN APPLYING FOR PROPIONIBACTERIUM ACNE (P.ACNE) TREATMENT AND THE REJUVENATION OF THE FACE.
- REDUCE THE USE OF CHEMICALS AND PROVIDE AN ALTERNATIVE TREATMENT THAT IS SAFE FOR THE PATIENT.
- THE LED PHOTOTHERAPY PROTOTYPE HAS THE POTENTIAL TO BE COMMERCIALIZED. THIS WILL REDUCE IMPORTS FROM OTHER COUNTRIES AND MAKE TREATMENT MORE ACCESSIBLE TO PATIENTS.

NOVELTY

- 2 IN 1 PHOTOTHERAPY DEVICE FOR ACNE AND FACE REJUVENATION TREATMENTS.
- THE LED PHOTO THERAPY DEVICE WITH LIGHT SPECTRUM AND LIGHT INTENSITY CONTROL CAN BE SPLIT BETWEEN RED AND BLUE AND MIXING BOTH RED AND BLUE AT THE SAME TIME.
- AFTER THE USER CONTROLS FROM THE TOUCH SCREEN, THE SYSTEM WILL OPERATE AUTOMATICALLY.

TO BE REQUIRED

- LED PHOTOTHERAPY PROTOTYPES IS ANOTHER TREATMENT OPTION THAT IS BECOMING MORE POPULAR FOR BOTH ACNE TREATMENT (P.ACNE) AND FACE REJUVENATION BY STIMULATING COLLAGEN PRODUCTION BENEATH THE SKIN. A SAFE WAY TO REDUCE ACNE INFLAMMATION IS TO USE LIGHT AT THE APPROPRIATE WAVELENGTH. LED LOW-LEVEL LIGHT THERAPY IS NONINVASIVE.
- LED PHOTOTHERAPY PROTOTYPES ARE SUITABLE FOR USE IN BEAUTY CLINIC OR IN THE DERMATOLOGY DEPARTMENT OF THE HOSPITAL.

INNOVATION

Low-level light therapy (LLLT) treats acne by using light with a wavelength of 400-700 nm to reduce inflammation, stimulate collagen production, and rejuvenate the facial skin. This explore designed and built a dual-wavelength LED LLLT device for facial treatment. The device's light spectrum, power density, uniformity, stability, and safety were all examined. The proposed system included an LED array with wavelengths of 415 and 633 nm. To control light intensity and treatment time, a human-machine interface with an embedded system was used. The phototherapy device is designed to be curvaceously sized to fit Asian people's face shapes. The LLLT device emitted light at 633 ± 5 nm red and 415 ± 5 nm blue wavelengths, with linear adjustable light power densities of $0-18.56$ mW/cm² and $0-3.70$ mW/cm², respectively. Over the course of 30 minutes, the spectrum distribution of red and blue light remained relatively constant. The uniformity and stability of the red spectrum were approximately 89.9% and 95.08%, respectively, while the blue spectrum was approximately 87.6% and 97.08%. The temperature of the experimental face was less than 31.5 °C. The LED phototherapy device will be used in clinical research in collaboration with dermatologists in the future.