

THE SCIENCE

There's really only one main source of energy for all our needs here on this planet - the sun.- radiating a continuous range of different types of energy known as the electromagnetic spectrum: radio, radar, microwaves, infrared, visible, ultraviolet, x-rays, and finally gamma rays.

ULTRAVIOLET

UVC = 270 – 290 nm (nanometers)

UVB = 290 – 320 nm

UVAII = 320 -340 nm: UVAI = 340 – 400 nm

VISIBLE

Violet: Blue = 400 – 500 nm

Green: Yellow = 500 – 600 nm

Orange: Red = 500 – 600 nm

INFRARED

Near Infrared = 760 – 1500 nm (0.76 – 1.5 μm = microns)

Middle Infrared = 1500 – 5600 nm (1.5/2.5 – 5.6 μm)

Far Infrared = 5600 – 1000000 nm (5.6 – 1000 μm)

Actually about 80% of the sun's output is in the form of infrared energy (IR). The largest section, and considered by many to be the safest part of the spectrum, infrared energy has the ability to heat objects directly, without having to heat the surrounding air or another object for transference as in convection or conduction, and so is referred to as 'radiant' energy. Our atmosphere has a sort of 'window' that allows infrared rays to reach the earth and be absorbed at wavelengths of around the 7 to 14 micron range. What is fascinating is that once warmed, the earth also radiates infrared rays back out again in the same range.

Living things and certain minerals such as tourmaline, serpentine and some forms of granite also absorb and transmit infrared energy. Once absorbed, our bodies actually radiate infrared energy at between 3 and 50 microns (300 – 500 nanometers) with the peak human output at about 9.4 microns (940 nm).

This inherent production of infrared energy is naturally associated with a wide variety of healing responses, and as our ancestors knew instinctively, there are times

when the body needs a boost of infrared/radiant/heat energy to ensure optimum tissue repair and healing.

The fact that our palms emit infrared energy at around the 8 to 14 micron range is recorded historically through ancient Eastern medical texts, as the Ayurvedic and Oriental tradition of **palm healing**. Known as a form of **pranic** healing in the Ayurvedic tradition, **Chi** energy healing in Korea and China, and in Japan as **Kikoh** - more recently **palming** has been used as an integral part of contemporary Light Therapy and myopia reduction when treating the eyes.

RESEARCH EVIDENCE

Master Kim dedicated 12 years of research to **WullStone FIRE** Therapy in order to reach the exacting standards of the Korean FDA and share its healing benefits.

For more than half of a century scientists and clinicians world-wide have spent enormous amounts of time, energy and money studying and developing the therapeutic use of visible and infrared energy. NASA did extensive research in the early 1980's on the use of infrared stimulation of wound healing and cardiovascular function for astronauts during protracted space travel.

According to supporting research, those body tissues that most need a boost of energy for maintenance or repair **selectively** absorb infrared rays, while any surplus rays pass on harmlessly: a phenomenon known as selective '**resonant absorption**'.

Many decades of evidence based research has shown that infrared molecular resonance absorption with subsequent activation of organic compounds and waterⁱ bring about an increase in the rate of metabolic processesⁱⁱ, improvement in haemodynamicsⁱⁱⁱ; microcirculation and subsequent healing rate of infected, inflamed, and congested tissues^{iv & v}; the augmentation of immune response through enhancement of T cell activation and proliferation, NK [Natural Killer] cell activation, B cell function and neutrophil migration, motility and chemotaxis.^{vi}, removal of cellular wastes^{vii}, lasting significantly beyond treatment periods^{viii}; reduction of localized and systemic discomfort and pain^{ix}; positive growth effects on human fibroblasts (cells that rebuild connective tissue) DNA synthesis and protein synthesis^x; resolution of inflammatory infiltrates, edema and exudates^{xi}; and balance of autonomic dysregulation.

Infrared energy may penetrate living tissues to a depth of 3-5 centimeters (over 1½ inches) and because of the resonance absorption phenomenon, body tissues may absorb well over 90% of the infrared waves that reach the skin surface.

The **WullStone FIRE** Custom Care System provides the optimum distribution of infrared energy with wavelengths ranging from 4 to 14 microns - thereby maximizing the higher penetration of the middle band waves from 2 to 5.6 microns that are generally considered to achieve deep penetration, and neatly

combining them with most of the longer waves, i.e. from 5.6 to 25 microns that produce resonant absorption for healthy tissue output.

ⁱ Woo Hyn Pak, 1998; Choel Kun Chi, 2000. Dr. Tsu-Tsair Oliver Chi. Resonant Absorption:

ⁱⁱ Woo Hyn Pak, 1998; Choel Kun Chi, 2000, Jae Yoon Kim 2001a 2001b, 2001c; Rae Joon Park, 2001a,2001b,2001c;

ⁱⁱⁱ Ikeda et al, 2001. The First Department of Internal Medicine, Faculty of Medicine, Kagoshima University, Japan.

^{iv} Ogita S, Imanaka M, Matsuo S, Takebayashi T, Nakai Y, Fukumasu H, Matsumoto M, Iwanaga K. Osaka City Prenatal Center, Japan. Effects of far-infrared radiation on lactation. *Ann Physiol anthropol* 1990 Apr;9(2):83-91

^v Hiruma M, Kawanda A, Noguchi H, Ishibashi A, Conti Diaz IA. Department of Dermatology, National Defense Medical College, Saitama, Japan. Hyperthermic treatment of spirotrichosis: experimental use of infrared and far-infrared rays. *Mycoses* 1992 Nov-Dec;35(11-12):293-9

^{vi} Julie R. Ostberg and Elizabeth A. Repasky of the Roswell Park Cancer Institute, New York. *The International Journal of Hyperthermia* (2000, Vol. 16 No. 1),

^{vii} Niwa Institute for Immunology, Tosashimizu, Japan. *International Journal of Biometerology*,(1993)

^{viii} *ibid.* ref. 5 & 13

^{ix} Dr. Bu Gil Kim, Hong Ik Yacdol Company Ltd. (1) Dec 1992, Kyungsan University Hospital, Susong-Du, Daegu, Korea. (2) Jan 1993, Dongkuk University, BuSok HangBang Hospital, Kyungju City, Kyungbuk, Korea.

^x National Yang-Ming College, Taipei, Taiwan. *American Journal of Chinese Medicine* (1991)

^{xi} Jae Yoon Kim, MSc, PT, Department of Rehabilitation Science, SNU Medical School (2000)