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Health & Medical News - Hands glow in the dark - 07/09/2005

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Hands glow in the dark

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[Discovery News](#)

Wednesday, 7 September 2005

Human hands glow, but fingernails release the most light, according to a recent study that finds all parts of the hand emit photons.

The findings support earlier research that suggests most living things, including plants, release light.

Since disease and illness appear to affect the strength and pattern of the glow, scientists say the discovery might lead to less-invasive ways of diagnosing patients.

Dr Mitsuo Hiramatsu, a scientist at the Central Research Laboratory at Hamamatsu Photonics in Japan, who led the research, says hands are not the only parts of the body that shine light by releasing photons, or tiny, energised packets of light.

"Not only the hands, but also the forehead and bottoms of our feet emit photons," Hiramatsu says.

In terms of hands "the presence of photons means that our hands are producing light all of the time", he adds.

The light is invisible to the naked eye, so Hiramatsu and his team use a powerful photon counter to detect it.

Fingernails release 60 photons, fingers release 40 and the palms are the dimmest of all, with 20 photons measured.

The findings are published recently in the [Journal of Photochemistry and Photobiology B: Biology](#).

Hiramatsu is not certain why fingernails light up more than the other parts of the hand.

"It may be because of the optical window property of fingernails," he says, meaning that the fingernail works somewhat like a prism to scatter light.

What's behind the light?

To find out what might be creating the light in the first place, he and colleague Kimitsugu Nakamura asked test subjects to hold plastic bottles full of hot or cold water before measuring their hand photons.

The researchers also pumped nitrogen or oxygen gas into the dark box where the people placed their hands as they were being analysed.

Warm temperatures increased the release of photons, as did the introduction of oxygen. Rubbing mineral oil over the hands also heightened light levels.

Based on those results, the scientists theorise the light "is a kind of chemiluminescence", a luminescence based on chemical reactions, such as those that make fireflies glow.

The researchers believe 40% of the light results from the chemical reaction that constantly occurs as our hand skin reacts with oxygen.

Since mineral oil, which permeates into the skin, heightens the light, they also now think 60% of the glow may result from chemical reactions that take place inside the skin.

The power of light

Professor Fritz-Albert Popp, an expert on biologically related photons at the [International Institute of Biophysics](#) in Germany, agrees with the findings and is not surprised by them.

"One may find clear correlations to kind and degree [type and severity] of diseases," he says.

Popp and his team believe the light from the forehead and the hands pulses with the same basic rhythms, but that these pulses become irregular in unhealthy people.

A study he conducted on a muscular sclerosis patient seemed to validate the theory.

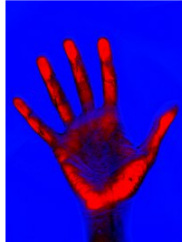
Both he and Hiramatsu hope future studies will reveal more about human photon emissions, which could lead to medical diagnosis applications.

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Hands emit photons, possibly as a result of chemiluminescence
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