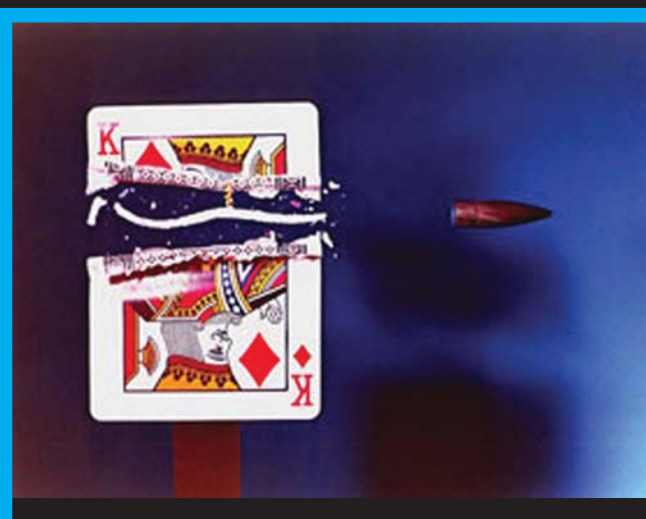


What can you do with Imaging? Well, for starters...

THE VLT SURVEY TELESCOPE: THE LARGEST TELESCOPE IN THE WORLD DESIGNED FOR VISIBLE LIGHT SKY SURVEYS · SEE THE SHOE MARK OF A BURGLAR ON VINYL TILE, USING NEAR-ULTRAVIOLET VISION · ENJOY 3D TELEVISION WITHOUT SPECIAL GLASSES · USE SHORT-WAVE INFRARED IMAGING TECHNOLOGY TO FIND OUT HOW A CRIMINAL ALTERED A DOCUMENT · DIGITAL PHOTOGRAPHY AND SPECIAL EFFECTS WITHOUT SPECIAL GLASSES · PHYSICIANS, DENTISTS, RADIOLOGISTS, ASTRONOMERS, FIREFIGHTERS, ART CONSERVATORS, HISTORIANS, ARCHAEOLOGISTS, CRIME INVESTIGATORS, MILITARY PERSONNEL, ENGINEERS, SCIENTISTS

SEE THE LANDSCAPE UNDERNEATH THE CLOUDS OF VENUS, USING MICROWAVES · USE NANOPROBE TECHNOLOGY TO SEE A QUANTUM DOT, WHICH IS SINGLE-MOLECULE SIZE · SOLVE PROBLEMS WITH IMAGING · FIND THE SOURCE OF EPILEPSY WITH A POSITRON EMISSION TOMOGRAPHY (PET SCAN) TO TREAT IT MOST EFFECTIVELY · REVEAL THE SECRETS OF EGYPTIAN LIFE WITH A CT SCAN OF IRETHORROU, A 2,500-YEAR-OLD MUMMIFIED PRIEST · SEE A 49 MILLION-YEAR-OLD SPIDER FOSSIL WITH X-RAY COMPUTED TOMOGRAPHY · TAKE A PHOTOGRAPH OF YOUR PET · WITNESS THE BIRTH OF STARS BY VIEWING THE SPECTACULAR MESSIER 17, ALSO KNOWN AS THE OMEGA NEBULA, WITH THE VLT SURVEY TELESCOPE (VST) · ENSURE AIRPORT SECURITY WITH BACKSCATTER X-RAY TECHNOLOGY · SEE THE SHOE MARK OF A BURGLAR ON VINYL TILE, USING NEAR-ULTRAVIOLET VISION · ENJOY 3D TELEVISION WITHOUT SPECIAL GLASSES · USE SHORT-WAVE INFRARED IMAGING TECHNOLOGY TO FIND OUT HOW A CRIMINAL ALTERED A DOCUMENT · DIGITAL PHOTOGRAPHY AND SPECIAL EFFECTS WITHOUT SPECIAL GLASSES · PHYSICIANS, DENTISTS, RADIOLOGISTS, ASTRONOMERS, FIREFIGHTERS, ART CONSERVATORS, HISTORIANS, ARCHAEOLOGISTS, CRIME INVESTIGATORS, MILITARY PERSONNEL, ENGINEERS, SCIENTISTS



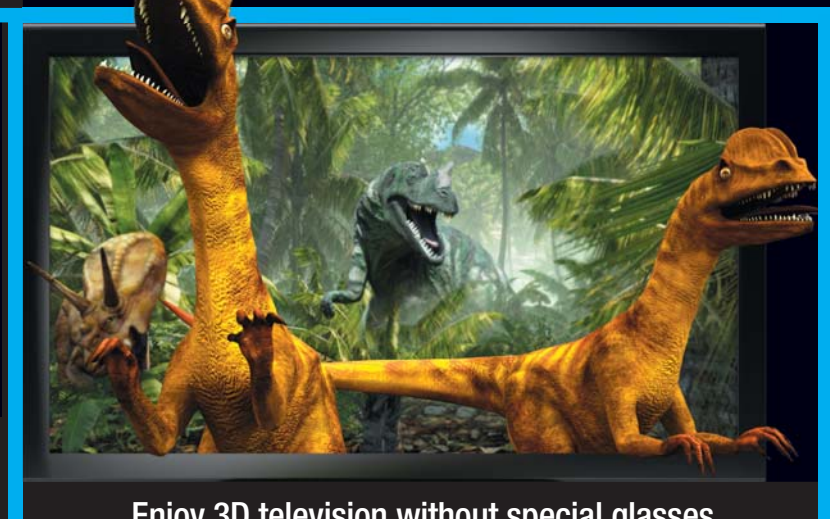
See what can't be seen with the naked eye, with high-speed photography.



See a 49 million-year-old spider fossil with X-ray computed tomography.



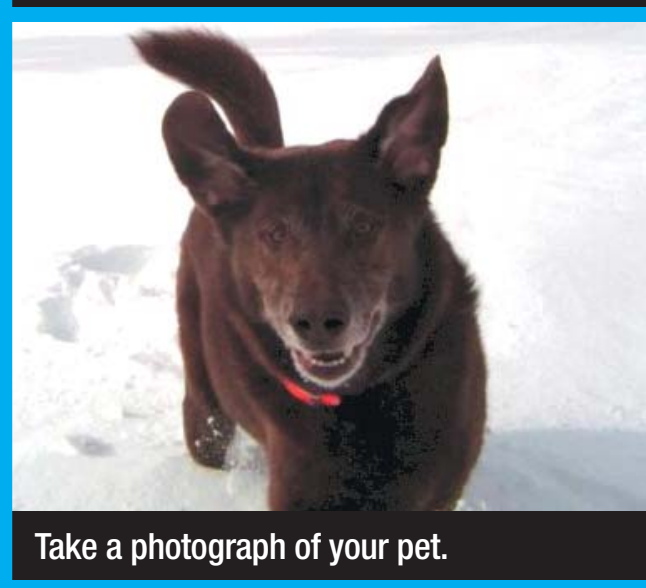
Ponder the beauty of Earth in this image from Apollo 17 in 1972.



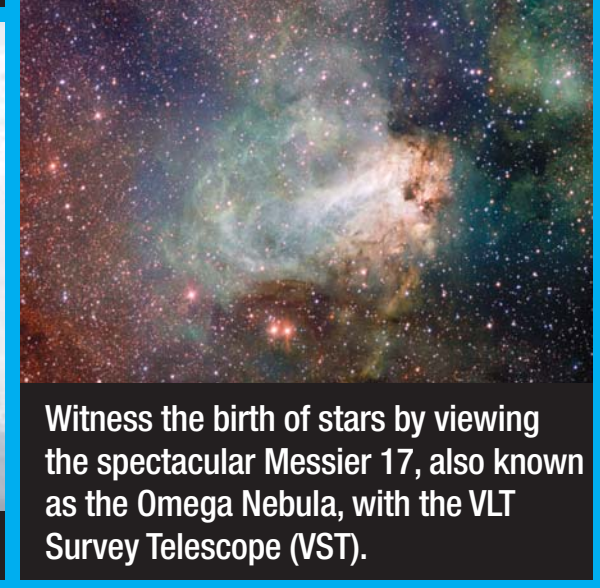
Enjoy 3D television without special glasses.



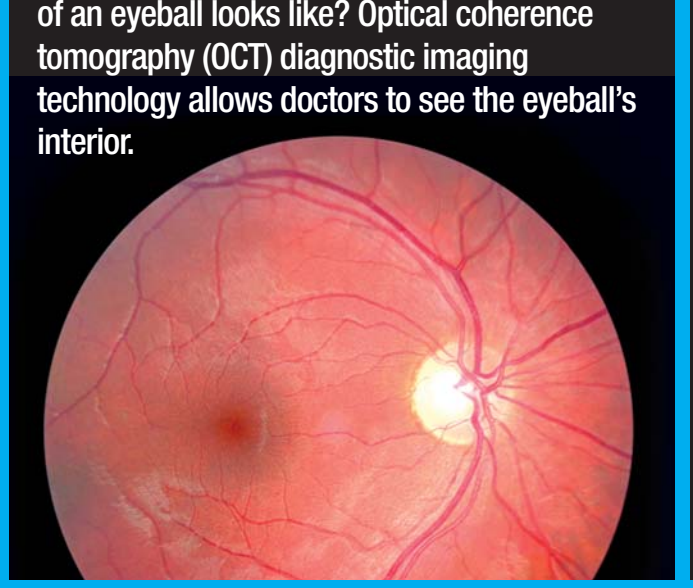
Just for fun, see how an opaque bag still lets through mid-wave infrared (MWIR) light.



Take a photograph of your pet.



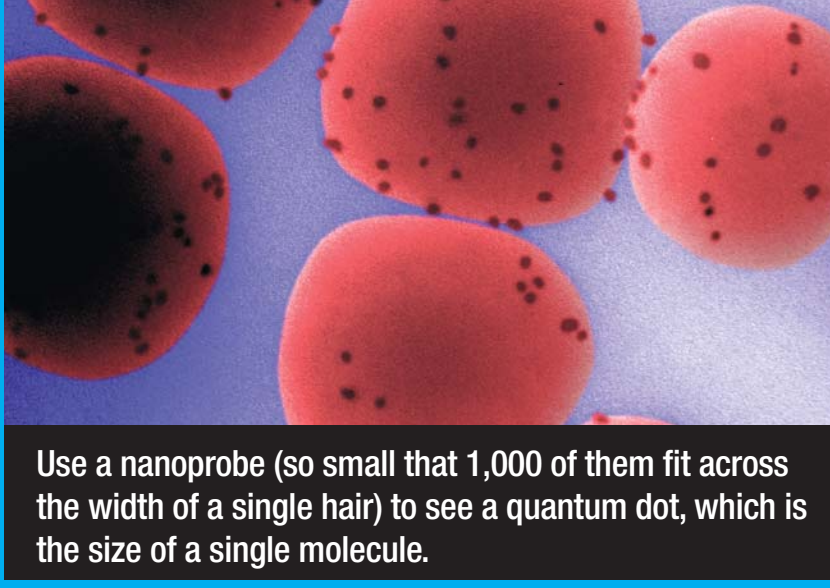
Witness the birth of stars by viewing the spectacular Messier 17, also known as the Omega Nebula, with the VLT Survey Telescope (VST).



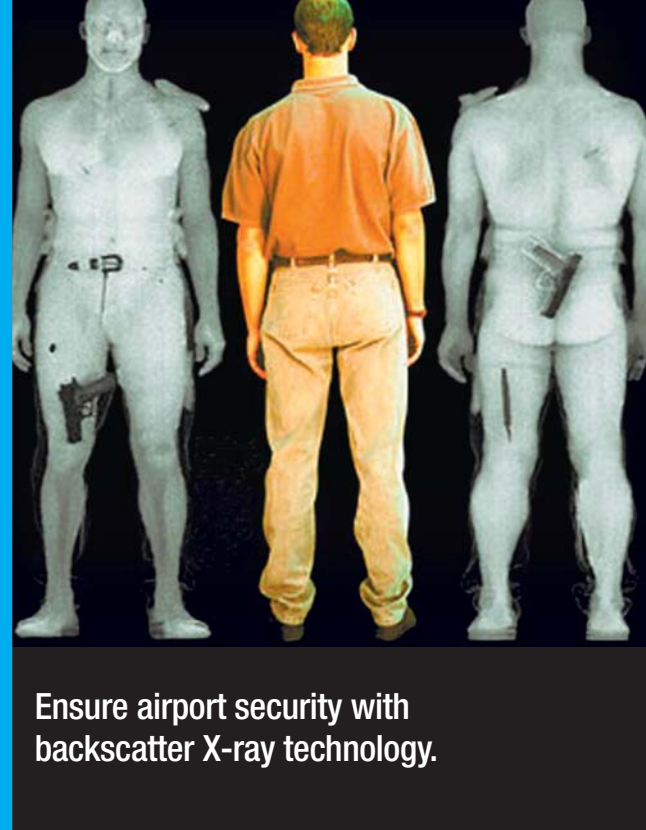
Have you ever wondered what the inside of an eyeball looks like? Optical coherence tomography (OCT) diagnostic imaging technology allows doctors to see the eyeball's interior.



Learn to perform surgery with 3D images from high-resolution computed tomography (CT) scans.



Use a nanoprobe (so small that 1,000 of them fit across the width of a single hair) to see a quantum dot, which is the size of a single molecule.

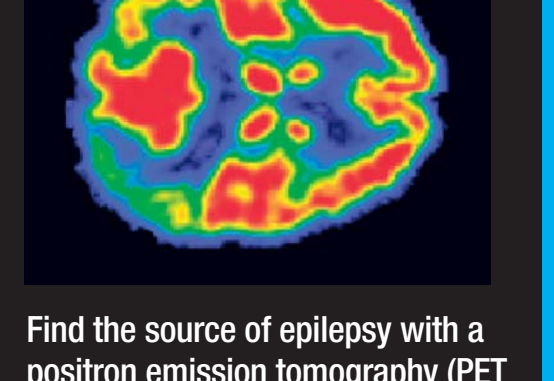


Ensure airport security with backscatter X-ray technology.

The secret password to my ~~Bank~~ Bank account is 1887543. Don't tell anyone that, or they could steal all my money!

The secret password to my ~~Bank~~ Bank account is ~~1887543~~. Don't tell anyone that, or they could steal all my money!

Use short-wave infrared imaging technology to find out how a criminal altered a document.



Find the source of epilepsy with a positron emission tomography (PET scan) to treat it most effectively.



See the shoe mark of a burglar on vinyl tile, using near-ultraviolet vision.



See the landscape underneath the clouds of Venus, using microwaves.



Find a person in a smoke-filled room with a long-wave infrared (LWIR) detection device.



Reveal the secrets of Egyptian life with a CT scan of Irethorrou, a 2,500-year-old mummified priest.

What Exactly is Imaging?

Vision, considered to be one of the most important and valued of the human senses, is the ability to interpret information and surroundings from the effects of visible light reaching the eye. However, we are also surrounded by invisible light, and objects that appear to not be emitting light are actually always emitting light from some part of the spectrum. When we can detect and utilize light from both visible and invisible parts of the spectrum with imaging techniques, our ability to see things expands tremendously, opening up our world. Imaging technology utilizes the full spectrum of light in order to create visual representation of objects.

Things that are very small, very fast, far away, or otherwise hidden can now be studied and utilized to answer questions and solve problems with imaging. Imaging is used for study or detection of a condition or problem. It is also used for entertainment, special effects, or in everyday applications such as digital photography. A vast array of professionals rely on imaging, including physicians, astronomers, firefighters, art conservators, historians, archaeologists, crime investigators, military personnel, engineers, scientists, and others.

Do you want to explore more?

For cool websites that involve optics and photonics visit: spie.org/resources

Thanks to Austin Richards, *Alien Vision: Exploring the Electromagnetic Spectrum with Imaging Technology*, Second Edition, SPIE PRESS.

Photos courtesy of: FLIR (*Smoke-filled room, opaque bag, altered document*); Yong Xu, Virginia Tech (*Quantum dots*); Calvin J. Hamilton, NASA (*Venus*); Dr. Michael E. Phelps, UCLA School of Medicine (*PET scan*); Stephen Warlen, Kansas City Police Department Crime Lab. (*Shoe mark of the burglar*); ESO/INAF-VST/OmegaCAM—acknowledgement: OmegaCen/Astro-WISE/Kapteyn Institute (*Omega Nebula*); The Legion of Honor, Fine Arts Museums of San Francisco (*Secrets of Egyptian life*); University of Manchester—Dunlop, J. A., Penney, D., Dalüge, N., Jäger, P., McNeil, A., Bradley, R., Withers, P. J., Preziosi, R. F. (*Computed tomography recovers data from historical amber: an example from huntsman spiders, published in Naturwissenschaften*); Muehlenau (*3D rendering of a brain created with the VOXEL-MAN program from magnetic resonance imaging data*); The Blue Marble Earth (NASA); Dr. Harold Edgerton (*Cutting the card quickly*).