



August Toepler

1836-1912

August Toepler was a German physicist who was the first to succeed at visualizing acoustic waves in air.

The presence of inhomogeneities in optically transparent materials was first discovered by Robert Hooke in 1665, who found that it is possible to view normally invisible gradients in the refractive index of materials as “schlieren,” which is the German word for “streaks.”

Toepler developed the protocols for visualizing schlieren in a laboratory setting in the mid-19th Century while serving as a lecturer of chemistry and physics at the Academy of Poppelsdorf. He initially applied his techniques to the visualization of heat and flow phenomena and later turned to imaging electric sparks, which allowed him to study the propagation, reflection and refraction of shock waves. In 1870 Toepler, together with Ludwig Boltzmann, applied the method of schlieren photography to visualize very weak sound waves at the threshold of hearing.

Among his many contributions to the field of electrostatics, Toepler invented an “[influence machine](#)” to convert mechanical work to electrostatic energy for use in [X-ray photography](#). He served in leadership positions at a number of universities throughout Europe until retiring as director of the Physical Institute at the Dresden Technical University in 1900.