



# THE INTELLECTUAL PROPERTY LAW ASSOCIATION OF CHICAGO

Proudly Presents The

**2019 Creator Of The Year Award**

**To Nick Holonyak, Jr., M.D.**

**Nick Holonyak, Jr.** is a prolific engineer, educator, inventor and innovator in the fields of electronics, electrical and computer engineering. His work has led to significant advancements in semiconductor technology, especially in the areas of Light-Emitting Diodes (LEDs) and laser diodes. He began his distinguished career at Bell Telephone Laboratories working on Silicon technologies and later at General Electric's research laboratory in Syracuse, New York where he developed Silicon thyristors and most famously in 1962, he invented visible light emitting LEDs and laser diodes. LED and laser diode technology have come a long way since his initial discovery and are now ubiquitous as critical components in many electronic devices ranging from solid-state lighting, fiber optic telecommunications, DVD players, and bar code readers. White LEDs, the successor of Nick's invention, are now rapidly replacing the Edison light bulb and helping reduce world-wide energy use.

Dr. Holonyak was born November 3, 1928 in southern Illinois. He earned his Bachelor's (1950), Master's (1951), and Doctoral (1954) degrees in electrical engineering from the University of Illinois at Champaign-Urbana where the Nobel Laureate John Bardeen was his advisor. Since 2007, he is the John Bardeen Endowed Chair Emeritus in Electrical and Computer Engineering and Physics at the University of Illinois, where he has taught since leaving General Electric in 1963. Nick has advised over 60 Ph.D.'s over his illustrious academic career, many advancing the technologies Holonyak pioneered and 10 of his former students are now members of the National Academy of Engineering. He continues his research at University of Illinois, most recently investigating transistor lasers with fellow faculty members. For more information regarding his achievements, see <https://ece.illinois.edu/directory/profile/nholonya>.





Dr. Holonyak has published a large number of impactful articles and his innovative work in the field of semiconductors has been recognized by the USPTO and foreign patent offices. At last count, he is named as inventor or co-inventor in over 50 US patents and numerous patents granted in Canada, Europe, and other countries, mostly for semiconductor lasers and LEDs, as well as their method of manufacture and use. His first filed application in 1963 entitled “Forward biased negative resistance semiconductor devices” matured into US Pat. No. 3,249,764 in 1966. His other notable patents include: “Semiconductor light emitting device,” US Pat. No. 4,270,094, which claims quantum well emitters that are used in every modern light-emitting device; “Semiconductor device fabrication with disordering elements introduced into active region,” US Pat. No. 4,511,408, which claims layer intermixing that is used extensively in manufacturing of laser diodes; and “AlGaAs native oxide” US Pat. No. 5,262,360 claiming the oxidation of AlGaAs which enables vertical-cavity surface-emitting lasers used in short haul telecommunications. His latest patent was issued by the USPTO in 2016 on transistor lasers, a full fifty years after his first patent. He has kept the scientific and IP communities busy keeping up with his advances for over 60 years, and he continues to amaze those of us who appreciate and follow his work.

Dr. Holonyak has won numerous awards over his career including the National Medal of Science (1990), Japan Prize (1995), IEEE Medal of Honor (2003), National Medal of Technology (2003), Lemelson-MIT Prize (2005), and was named to the National Inventor Hall of Fame (2008).