

1907 PHYSICS NOBEL

OSA Honorary Member **Albert Abraham Michelson** "for his optical precision instruments and the spectroscopic and metrological investigations carried out with their aid"

1930 PHYSICS NOBEL

OSA Honorary Member **Sir Chandrasekhara Venkata Raman** "for his work on the scattering of light and for the discovery of the effect named after him"

1966 CHEMISTRY NOBEL

Robert S. Mulliken "for his fundamental work concerning chemical bonds and the electronic structure of molecules by the molecular orbital method"

1971 CHEMISTRY NOBEL

OSA Honorary Member **Gerhard Herzberg** "for his contributions to the knowledge of electronic structure and geometry of molecules, particularly free radicals"



1902 PHYSICS NOBEL

Hendrik Antoon Lorentz and Pieter Zeeman "for their researches into the influence of magnetism upon radiation phenomena"



1919 PHYSICS NOBEL

Johannes Stark "for his discovery of the Doppler effect in canal rays and the splitting of spectral lines in electric fields"

1955 PHYSICS NOBEL

OSA Honorary Member **Willis Eugene Lamb** "for his discoveries concerning the fine structure of the hydrogen spectrum"

Spectroscopy & the Nobel

October is when scientists around the world await the results from Stockholm. Since the Nobel Prize was established in 1895, a surprising number of the awards have gone to advances related to or enabled by spectroscopy—from the spectral splitting of the Zeeman and Stark effects to cutting-edge advances enabled by laser frequency combs. We offer a small (and far from complete) sample here; to explore further, visit www.nobelprize.org.



OSA & the Nobel

Thirty-five OSA members have been awarded the Nobel Prize

- 1907** Albert Abraham Michelson
- 1923** Robert Andrews Millikan
- 1930** Sir Chandrasekhara Venkata Raman
- 1953** Frederik Zernike
- 1955** Willis Eugene Lamb
- 1964** Charles H. Townes
- 1964** Aleksandr Mikhailovich Prokhorov
- 1966** Alfred Kastler
- 1967** Haldan Keffer Hartline
- 1967** George Wald
- 1971** Dennis Gabor
- 1971** Gerhard Herzberg
- 1975** James Rainwater
- 1981** Nicolaas Bloembergen
- 1981** Arthur L. Schawlow
- 1996** Robert F. Curl Jr.
- 1997** Steven Chu
- 1997** Claude Cohen-Tannoudji
- 1997** William D. Phillips
- 2000** Zhores I. Alferov
- 2001** Eric Cornell
- 2001** Wolfgang Ketterle
- 2001** Carl Wieman
- 2005** Roy J. Glauber
- 2005** Theodor W. Haensch
- 2005** John L. Hall
- 2006** George Smoot
- 2006** John C. Mather
- 2009** George E. Smith
- 2009** Willard S. Boyle
- 2009** Charles K. Kao
- 2012** David J. Wineland
- 2014** Hiroshi Amano
- 2014** Stefan Hell
- 2014** W.E. Moerner

Read more about OSA and the Nobel Prize: www.osa.org/nobel

1996 CHEMISTRY NOBEL

OSA Fellow Robert F. Curl Jr., Richard Smalley and Harold Kroto (not pictured) "for their discovery of fullerenes"

1999 CHEMISTRY NOBEL

Ahmed H. Zewail "for his studies of the transition states of chemical reactions using femtosecond spectroscopy"

1981 PHYSICS NOBEL

Kai M. Siegbahn "for his contribution to the development of high-resolution electron spectroscopy" and OSA Honorary Members Nicolaas Bloembergen and Arthur L. Schawlow "for their contribution to the development of laser spectroscopy"

1989 PHYSICS NOBEL

Hans G. Dehmelt (pictured) and Wolfgang Paul "for the development of the ion trap technique"

2005 PHYSICS NOBEL

OSA Honorary Members Theodor W. Haensch and John L. Hall "for their contributions to the development of laser-based precision spectroscopy, including the optical frequency comb technique"