



**1901**

**Jacobus Henricus van 't Hoff** (The Netherlands, 30.8.1852 - 1.3.1911)

Germany, Berlin University,

*"in recognition of the extraordinary services he has rendered by the discovery of the laws of chemical dynamics and osmotic pressure in solutions".*

Scoperta delle leggi della dinamica chimica e della pressione osmotica nelle soluzioni.



**1902**

**Hermann Emil Fischer** (Germany, 9.10.1852 - 15.7.1919)

Germany, Berlin University,

*"in recognition of the extraordinary services he has rendered by his work on sugar and purine syntheses".*

Studi nella sintesi di carboidrati e purine.



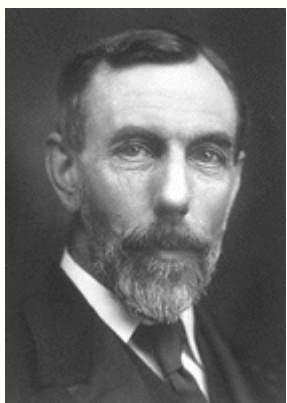
**1903**

**Svante August Arrhenius** (Sweden, 19.2.1859 - 2.10.1927)

Sweden, Stockholm University,

*"in recognition of the extraordinary services he has rendered to the advancement of chemistry by his electrolytic theory of dissociation".*

Teoria della dissociazione elettrolitica.



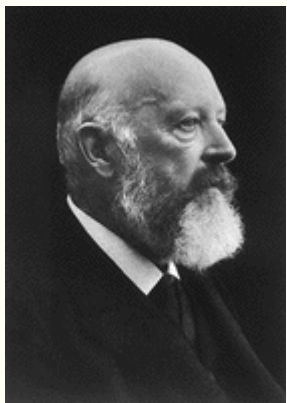
**1904**

**Sir William Ramsay** (Great Britain, 2.10.1852 - 23.7.1916)

Great Britain, London University,

*"in recognition of his services in the discovery of the inert gaseous elements in air, and his determination of their place in the periodic system".*

Studi sui gas nobili.



**1905**

**Johann Friedrich Wilhelm Adolf von Baeyer** (Germany, 31.10.1835 - 20.8.1917)

Germany, Munich University,

*"in recognition of his services in the advancement of organic chemistry and the chemical industry, through his work on organic dyes and hydroaromatic compounds".*

Studi sui composti aromatici.



**1906**

**Henri Moissan** (France, 28.9.1852 - 20.2.1907)

France, Sorbonne University, Paris,

*"in recognition of the great services rendered by him in his investigation and isolation of the element fluorine, and for the adoption in the service of science of the electric furnace called after him".*

Studi sul fluoro.



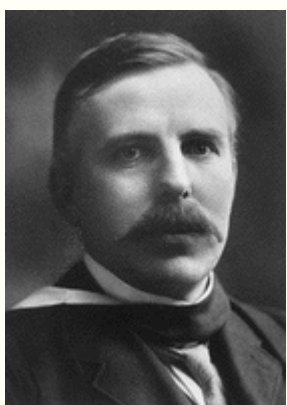
**1907**

**Eduard Buchner** (Germany, 20.5.1860 - 13.8.1917)

Germany, Landwirtschaftliche Hochschule, (Agricultural College), Berlin,

*"for his biochemical researches and his discovery of cellfree fermentation".*

Studi sulla fermentazione.



**1908**

**Sir Ernest Rutherford** (Nelson, New Zealand, 30.8.1871 - 19.10.1937)

Great Britain, Victoria University, Manchester,

*"for his investigations into the disintegration of the elements, and the chemistry of radioactive substances".*

Studi sugli elementi radioattivi e sul decadimento nucleare.



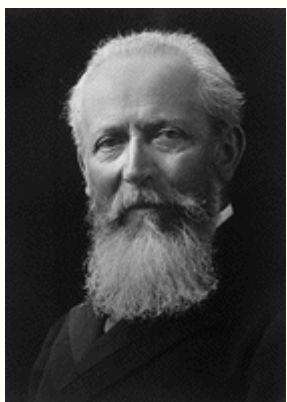
**1909**

**Wilhelm Ostwald** (Riga, then Russia, 2.9.1853 - 4.4.1932)

Germany, Leipzig University,

*"in recognition of his work on catalysis and for his investigations into the fundamental principles governing chemical equilibria and rates of reaction".*

Studi sugli equilibri chimici e sui catalizzatori.



**1910**

**Otto Wallach** (Germany, 27.3.1847 - 26.2.1931)

Germany, Goettingen University,

*"in recognition of his services to organic chemistry and the chemical industry by his pioneer work in the field of alicyclic compounds".*

Studi sui composti aliciclici.



**1911**

**Marie Curie, née Sklodowska** (Warsaw, Poland, 7.11.1867 - 4.7.1934)

France, Sorbonne University, Paris,

*"in recognition of her services to the advancement of chemistry by the discovery of the elements radium and polonium, by the isolation of radium and the study of the nature and compounds of this remarkable element".*

Scoperta del radio e del polonio.



**1912**

The Prize was divided equally between:

**Victor Grignard** (France, 16.5.1871 - 13.12.1935)

France, Nancy University,

*"for the discovery of the so-called Grignard reagent, which in recent years has greatly advanced the progress of organic chemistry";*

Scoperta dei "Reattivi di Grignard" e studi nella chimica degli eteri.

ed anche...



**1912**

**Paul Sabatier** (France, 5.11.1854 - 14.8.1941)

France, Toulouse University,

*"for his method of hydrogenating organic compounds in the presence of finely disintegrated metals whereby the progress of organic chemistry has been greatly advanced in recent years".*

Idrogenazione di composti organici in presenza di metalli finemente suddivisi.



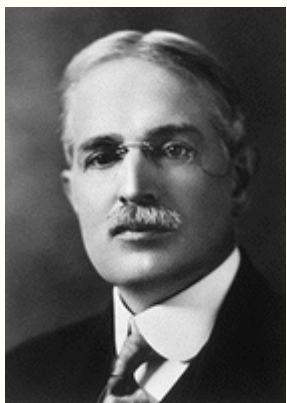
**1913**

**Alfred Werner** (Mulhouse, Alsace, then Germany, 12.12.1866 - 15.11.1919)

Switzerland, Zürich University,

*"in recognition of his work on the linkage of atoms in molecules by which he has thrown new light on earlier investigations and opened up new fields of research especially in inorganic chemistry".*

Studi sul legame chimico in molecole inorganiche.



**1914**

**Theodore William Richards** (USA, 31.1.1868 - 2.4.1928)

USA, Harvard University, Cambridge, MA,

*"in recognition of his accurate determinations of the atomic weight of a large number of chemical elements".*

Determinazione dei pesi atomici.



**1915**

**Richard Martin Willstätter** (Germany, 13.8.1872 - 3.8.1942)

Germany, Munich University,

*"for his researches on plant pigments, especially chlorophyll".*

Studi sulla clorofilla e sugli altri pigmenti vegetali.



**1916**

*The prize money was allocated to the Special Fund of this prize section*

**Non assegnato**



**1917**

*The prize money was allocated to the Special Fund of this prize section*

**Non assegnato**



**1918**

**Fritz Haber** (Germany, 9.12.1868 - 29.1.1934)

Germany, Kaiser-Wilhelm-Institut (now Fritz-Haber-Institut) für physikalische Chemie und Electrochemie, Berlin-Dahlem,

*"for the synthesis of ammonia from its elements".*

Sintesi dell'ammoniaca.



**1919**

*The prize money was allocated to the Special Fund of this prize section*

**Non assegnato**



**1920**

**Walther Hemann Nernst** (Germany, 25.6.1864 - 18.11.1941)

Germany, Berlin University,

*"in recognition of his work in thermochemistry".*

Studi sulla termodinamica.



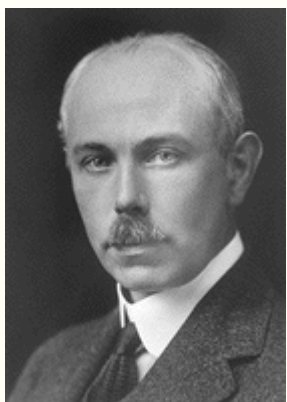
**1921**

**Frederick Soddy** (Great Britain, 2.9.1877 - 22.9.1956)

Great Britain, Oxford University,

*"for his contributions to our knowledge of the chemistry of radioactive substances, and his investigations into the origin and nature of isotopes".*

Chimica delle sostanze radioattive. Ricerche sugli isotopi.



**1922**

**Francis William Aston** (Great Britain, 1.9.1877 - 20.11.1945)

Great Britain, Cambridge University,

*"for his discovery, by means of his mass spectrograph, of isotopes, in a large number of non-radioactive elements, and for his enunciation of the whole-number rule".*

Scoperta di isotopi. Studi sulla spettrometria di massa.



**1923**

**Fritz Pregl** (Austria, 3.9.1869 - 13.12.1930)

Austria, Graz University,

*"for his invention of the method of micro-analysis of organic substances".*

Microanalisi dei composti organici.



**1924**

*The prize money was allocated to the Special Fund of this prize section*

**Non assegnato**



**1925**

**Richard Adolf Zsigmondy** (Vienna, Austria, 1.4.1865 - 29.9.1929)

Germany, Goettingen University,

*"for his demonstration of the heterogenous nature of colloid solutions and for the methods he used, which have since become fundamental in modern colloid chemistry".*

Studi sulla chimica dello stato colloidale.



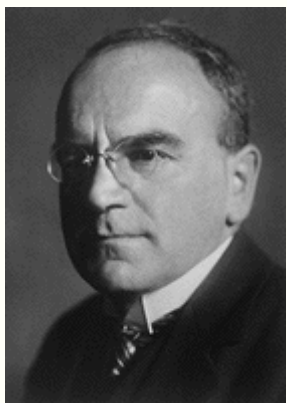
**1926**

**Theodor Svedberg** (Sweden, 30.8.1884 - 26.2.1971)

Sweden, Uppsala University,

*"for his work on disperse systems".*

Studi sui sistemi a dispersione colloidale e sull'ultracentrifuga.



**1927**

**Heinrich Otto Wieland** (Germany, 4.6.1877 - 5.8.1957)

Germany, Munich University,

*"for his investigations of the constitution of the bile acids and related substances".*

Struttura degli acidi biliari.



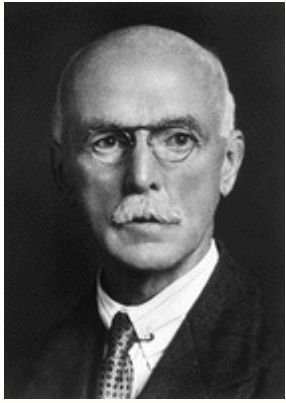
**1928**

**Adolf Otto Reinhold Windaus** (Germany, 25.12.1876 - 9.6.1959)

Germany, Goettingen University,

*"for the services rendered through his research into the constitution of the sterols and their connection with the vitamins".*

Studi sugli steroli e loro relazioni con le vitamine (vitamina D)



**1929**

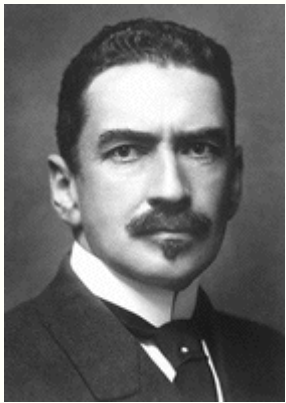
The Prize was divided equally between:

**Sir Arthur Harden** (Great Britain, 12.10.1861 - 17.6.1940)

Great Britain, London University,

Studio sulla fermentazione degli zuccheri e sull'attività degli enzimi.

and



**Hans Karl August Simon von Euler-Chelpin** (Augsburg, Germany, 15.2.1873 - 6.11.1964)

Sweden, Stockholm University,

*"for their investigations on the fermentation of sugar and fermentative enzymes".*

Studio sulla fermentazione degli zuccheri e sull'attività degli enzimi.



**1930**

**Hans Fischer** (Germany, 27.7.1881 - 31.3.1945)

Germany, Technische Hochschule (Institute of Technology), Munich,

*"for his researches into the constitution of haemin and chlorophyll and especially for his synthesis of haemin".*

Studi sui pigmenti ematici e su quelli delle piante.



**1931**

The Prize was awarded jointly to:

**Carl Bosch** (Germany, 27.8.1874 - 26.4.1940)

Germany, Heidelberg University and I.G. Farbenindustrie A.G., Heidelberg,

Sviluppo di processi chimici ad alta pressione.

and

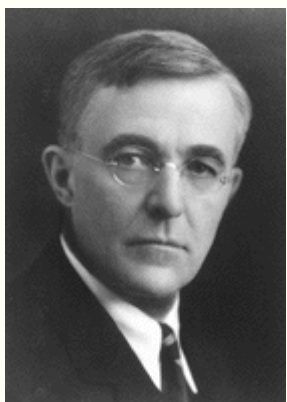


**Friedrich Bergius** (Germany, 11.10.1884 - 30.3.1949)

Germany, Heidelberg University and I.G. Farbenindustrie A.G. Mannheim-Rheinau,

*"in recognition of their contributions to the invention and development of chemical high pressure methods"*.

Sviluppo di processi chimici ad alta pressione.



**1932**

**Irving Langmuir** (USA, 31.1.1881 - 16.8.1957)

USA, General Electric Co., Schenectady, NY,

*"for his discoveries and investigations in surface chemistry"*.

Studi sui fenomeni chimici delle superfici.



**1933**

*The prize money was with 1/3 allocated to the Main Fund and with 2/3 to the Special Fund of this prize section.*

**Non assegnato**



**1934**

**Harold Clayton Urey** (USA, 29.4.1893 - 6.1.1981)

USA, Columbia University, New York, NY,

*"for his discovery of heavy hydrogen"*.

Scoperta del deuterio.



**1935**

The Prize was awarded jointly to:

**Frédéric Joliot** (France, 19.3.1900 - 14.8.1958)

France, Institut du Radium, Paris,

Sintesi di elementi radioattivi.

and his wife



**Irène Joliot-Curie** (France, 12.9.1897 - 17.3.1956)

France, Institut du Radium, Paris,

*"in recognition of their synthesis of new radioactive elements"*.

Sintesi di elementi radioattivi.



**1936**

**Petrus (Peter) Josephus Wilhelmus Debye** (Holland, 24.3.1884 - 2.11.1966)

Germany, Berlin University, and Kaiser-Wilhelm-Institut (now Max-Planck-Institut) für Physik, Berlin-Dahlem,

*"for his contributions to our knowledge of molecular structure through his investigations on dipole moments and on the diffraction of X-rays and electrons in gases"*.

Studi sul momento dipolare e sulla diffrazione dei raggi X.



**1937**

The Prize was divided equally between:

**Sir Walter Norman Haworth** (Great Britain, 19.3.1883 - 19.3.1950)

Great Britain, Birmingham University,

*"for his investigations on carbohydrates and vitamin C"*.

Studi sui carboidrati e sulla vitamina C.

and



**Paul Karrer** (Switzerland, 21.4.1889 - 18.6.1971)

Switzerland, Zürich University,

*"for his investigations on carotenoids, flavins and vitamins A and B2".*

Studi sui carotenoidi, sulla flavina e sulle vitamine A e B2.



**1938**

**Richard Kuhn** (Vienna, Austria, 3.12.1900 - 31.7.1967)

Germany, Heidelberg University and Kaiser-Wilhelm-Institut (now Max-Planck-Institut) für medizinische Forschung, Heidelberg,

*"for his work on carotenoids and vitamins".*

Studi sui carotenoidi e sulle vitamine.



**1939**

The Prize was divided equally between:

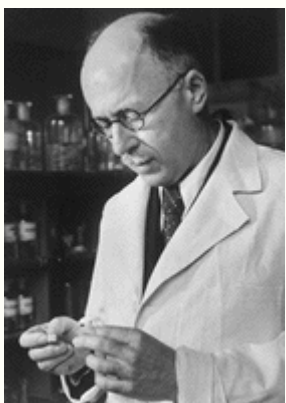
**Adolf Friedrich Johann Butenandt** (Germany, 24.3.1903 - 18.1.1995)

Germany, Berlin University and Kaiser-Wilhelm-Institut (now Max-Planck-Institut) für Biochemie, Berlin-Dahlem,

*"for his work on sex hormones".*

Studi sugli ormoni sessuali

and



**1939**

**Leopold Ruzicka** (Vukovar, then Austria-Hungary, 13.9.1887 - 26.9.1976)

Switzerland, Eidgenössische Technische Hochschule, (Federal Institute of Technology), Zürich,

*"for his work on polymethylenes and higher terpenes".*

Studi sui polimeri e sui terpeni.



**1940**

*The prize money was with 1/3 allocated to the Main Fund and with 2/3 to the Special Fund of this prize section.*

**Non assegnato**



**1941**

*The prize money was with 1/3 allocated to the Main Fund and with 2/3 to the Special Fund of this prize section.*

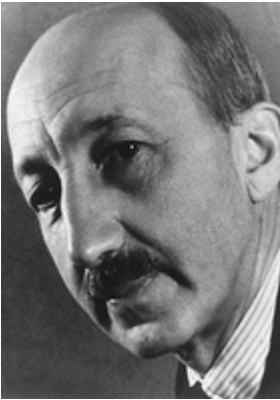
**Non assegnato**



**1942**

*The prize money was with 1/3 allocated to the Main Fund and with 2/3 to the Special Fund of this prize section.*

**Non assegnato**



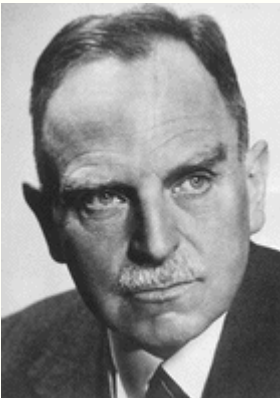
**1943**

**George de Hevesy** (Hungary, 1.8.1885 - 5.7.1966)

Sweden, Stockholm University,

*"for his work on the use of isotopes as tracers in the study of chemical processes".*

Applicazione di isotopi come indicatori in processi industriali.



**1944**

**Otto Hahn** (Germany, 8.3.1879 - 28.7.1968)

Germany, Kaiser-Wilhelm-Institut, (now Max-Planck Institut) für Chemie, Berlin-Dahlem,

*"for his discovery of the fission of heavy nuclei".*

Scoperta della fissione nucleare.



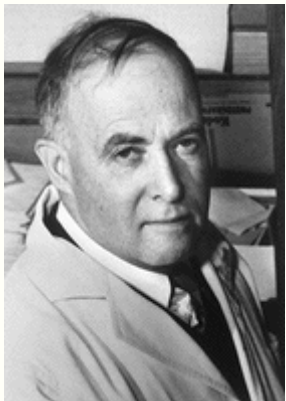
**1945**

**Artturi Ilmari Virtanen** (Finland, 15.1.1895 - 11.11.1973)

Finland, Helsinki University,

*"for his research and inventions in agricultural and nutrition chemistry, especially for his fodder preservation method".*

Scoperte nel campo della chimica degli alimenti e sulla loro conservazione.



**1946**

The Prize was divided, one half being awarded to:

**James Batcheller Sumner** (USA, 19.11.1887 - 12.8.1955)

USA, Cornell University, Ithaca, NY,

*"for his discovery that enzymes can be crystallized".*

Studi su metodi per la cristallizzazione di enzimi.

the other half jointly to:



**John Howard Northrop** (USA, 5.7.1891 - 27.5.1987)

USA, Rockefeller Institute for Medical Research, Princeton, NJ,

Preparazione di enzimi e proteine virali.

and



**Wendell M. Stanley** (USA, 16.8.1904 - 15.6.1971)

USA, Rockefeller Institute for Medical Research, Princeton, NJ,

*"for their preparation of enzymes and virus proteins in a pure form".*

Preparazione di enzimi e proteine virali.



**1947**

**Sir Robert Robinson** (Great Britain, 13.9.1886 - 8.2.1975)

Great Britain, Oxford University,

*"for his investigations on plant products of biological importance, especially the alkaloids".*

Studi sugli alcaloidi.



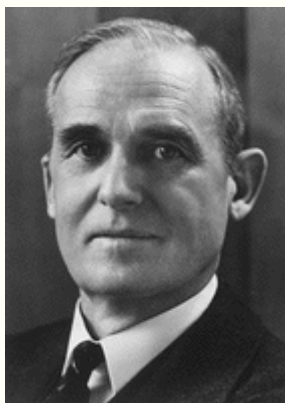
**1948**

**Arne Wilhelm Kaurin Tiselius** (Sweden, 10.8.1902 - 29.10.1971)

Sweden, Uppsala University,

*"for his research on electrophoresis and adsorption analysis, especially for his discoveries concerning the complex nature of the serum proteins".*

Studi sui metodi di elettroforesi e scoperta di proteine del siero.



**1949**

**William Francis Giauque** (USA, 12.5.1895 - 28.3.1982)

USA, University of California, Berkeley, CA,

*"for his contributions in the field of chemical thermodynamics, particularly concerning the behaviour of substances at extremely low temperatures".*

Studi sulla chimica e la termodinamica alle basse temperature.



**1950**

The Prize was awarded jointly to:

**Otto Paul Hermann Diels** (Germany, 23.1.1876 - 7.3.1954)

Germany, Kiel University,

Scoperte nella chimica degli elementi transuranici.

and

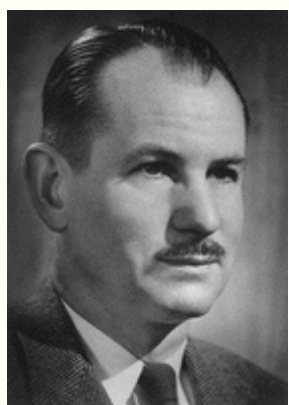


**Kurt Alder** (Germany, 10.7.1902 - 20.6.1958)

Germany, Cologne University,

*"for their discovery and development of the diene synthesis"*.

Scoperte nella chimica degli elementi transuranici.



**1951**

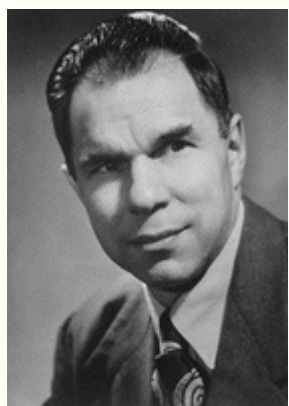
The Prize was awarded jointly to:

**Edwin M. McMillan** (USA, \*18.9.1907 - +1991)

USA, University of California, Berkeley, CA,

Scoperte nella chimica degli elementi transuranici.

and



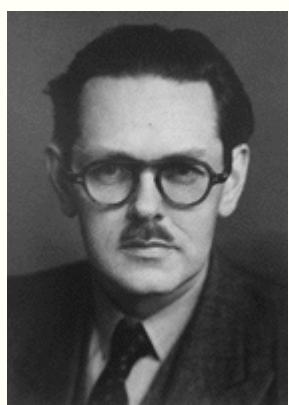
**1951**

**Glenn Theodore Seaborg** (USA, \*19.4.1912)

USA, University of California, Berkeley, CA,

*"for their discoveries in the chemistry of the transuranium elements"*.

Scoperte nella chimica degli elementi transuranici.



**1952**

The Prize was awarded jointly to:

**Archer John Porter Martin** (Great Britain, \*1.3.1910)

Great Britain, National Institute for Medical Research, London,

Studi sulla cromatografia.

**Archer J. P. Martin**



**Richard Laurence Millington Syge** (Great Britain, 28.10.1914 - 18.8.1994)

Great Britain, Rowett Research Institute, Bucksburn (Scotland),

*"for their invention of partition chromatography".*

Studi sulla cromatografia.

**Richard L. M. Syge**

**1953**

**Hermann Staudinger** (Germany, 23.3.1881 - 8.9.1965)

Germany, University of Freiburg im Breisgau and Staatliches Institut für makromolekulare Chemie (State Research Institute for Macromolecular Chemistry), Freiburg in Br.,

*"for his discoveries in the field of macromolecular chemistry".*

Scoperte nel campo della chimica delle macromolecole.

**Hermann Staudinger**



**1954**

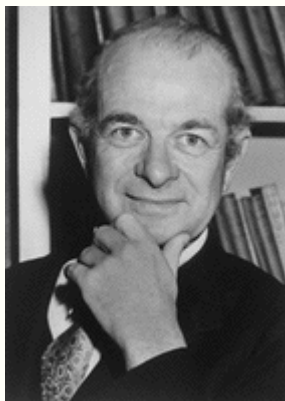
**Linus Carl Pauling** (USA, 28.2.1901 - 19.8.1994)

USA, California Institute of Technology, Pasadena, CA,

*"for his research into the nature of the chemical bond and its application to the elucidation of the structure of complex substances".*

Studi sulla natura del legame chimico e sulla struttura delle proteine.

**Linus Carl Pauling**



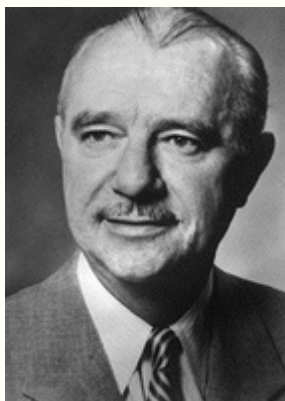
**1955**

**Vincent du Vigneaud** (USA, 18.5.1901 - 11.12.1978)

USA, Cornell University, New York, NY,

*"for his work on biochemically important sulphur compounds, especially for the first synthesis of a polypeptide hormone".*

Sintesi di un ormone polipeptidico.



**Vincent du Vigneaud**



**1956**

The Prize was awarded jointly to:

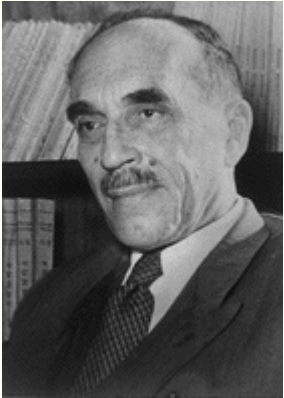
**Sir Cyril Norman Hinshelwood** (Great Britain, 19.6.1897 - 9.10.1967)

Great Britain, Oxford University,

Studi sui meccanismi delle delle reazioni chimiche.

**Sir Cyril N. Hinshelwood**

and



**Nikolai Nikolajevich Semjonow** (Soviet Union, 15.4.1896 - 25.9.1986)

USSR, Institute for Chemical Physics of the Academy of Sciences of the USSR, Moscow,

*"for their researches into the mechanism of chemical reactions".*

Studi sui meccanismi delle delle reazioni chimiche.

**Nikolai N. Semjonow**



**1957**

**Sir Alexander R. Todd** (Great Britain, \*2.7.1907)

Great Britain, Cambridge University,

*"for his work on nucleotides and nucleotide co-enzymes".*

Studi sui nucleotidi e sui loro coenzimi.

**Sir Alexander R. Todd**



**1958**

**Frederick Sanger** (Great Britain, \*13.8.1918)

Great Britain, Cambridge University,

*"for his work on the structure of proteins, especially that of insulin".*

Studi sulla struttura delle proteine.

**Frederick Sanger**

**1959**

**Jaroslav Heyrovský** (Czechoslovakia, 20.12.1890 - 27.3.1967)

Czechoslovakia, Polarographic Institute of the Czechoslovak Academy of Science, Prague,

*"for his discovery and development of the polarographic methods of analysis"*.

Studi sulla polarografia.

**Jaroslav Heyrovský**



**1960**

**Willard Frank Libby** (USA, 17.12.1908 - 8.9.1980)

USA, University of California, Los Angeles, CA,

*"for his method to use carbon 14 for age determination in archaeology, geology, geophysics, and other branches of science"*.

Applicazione del metodo del carbonio-14 nella radiodattazione.

**Willard F. Libby**



**1961**

**Melvin Calvin** (USA, \*7.4.1911 - +1997)

USA, University of California, Berkeley, CA,

*"for his research on the carbon dioxide assimilation in plants"*.

Studi sulla fotosintesi.

**Melvin Calvin**



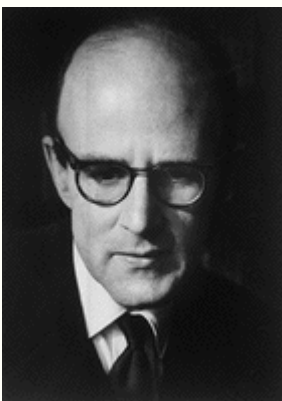
**1962**

The Prize was divided equally between:

**Max Ferdinand Perutz** (Vienna, Austria, \*19.5.1914)

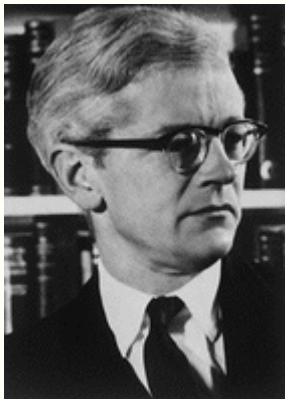
Great Britain, Laboratory of Molecular Biology, Cambridge,

Studi sulla struttura delle proteine globulari.



**Max Ferdinand Perutz**

and



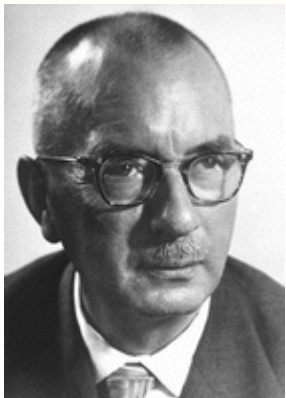
**Sir John Cowdery Kendrew** (Great Britain, \*24.3.1917 - +1997)

Great Britain, Laboratory of Molecular Biology, Cambridge,

*"for their studies of the structures of globular proteins".*

Studi sulla struttura delle proteine globulari.

**John Cowdery Kendrew**



**1963** The Prize was divided equally between:

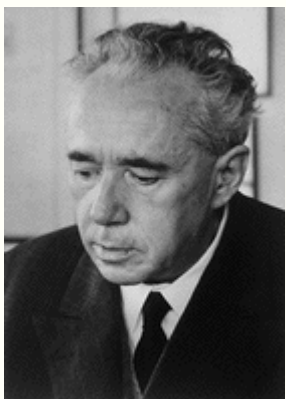
**Karl Ziegler** (Germany, 26.11.1898 - 11.8.1973)

Germany, Max-Planck-Institut für Kohlenforschung (Max-Planck-Institute for Carbon Research),  
Mülheim/Ruhr

Chimica e tecnologia dei polimeri.

**Karl Ziegler**

and



**Giulio Natta** (Italy, 26.2.1903 - 2.5.1979)

Italy, Institute of Technology, Milan,

*"for their discoveries in the field of the chemistry and technology of high polymers".*

Chimica e tecnologia dei polimeri.

**Giulio Natta**



**1964**

**Dorothy Crowfoot-Hodgkin** (Great Britain, \*12.5.1910 - +1994)

Great Britain, Royal Society, Oxford University, Oxford,

*"for her determinations by X-ray techniques of the structures of important biochemical substances".*

Determinazione della struttura di sostanze biologiche per mezzo di raggi X.



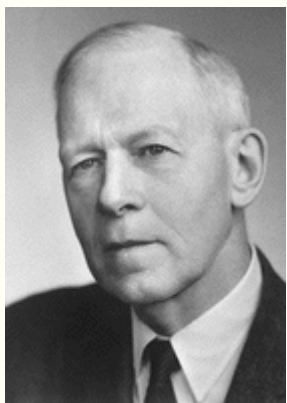
**1965**

**Robert Burns Woodward** (USA, 10.4.1917 - 8.7.1979)

USA, Harvard University, Cambridge, MA,

*"for his outstanding achievements in the art of organic synthesis".*

Sintesi di prodotti naturali.



**1966**

**Robert S. Mulliken** (USA, 7.6.1896 - 31.10.1986)

USA, University of Chicago, Chicago, IL,

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

Studi sulla struttura elettronica e sul legame chimico.



**1967**

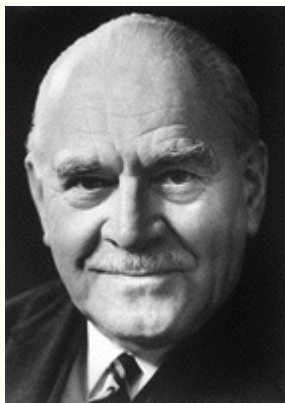
The Prize was divided, one half being awarded to:

**Manfred Eigen** (Germany, \*9.5.1927)

Federal Republic of Germany, Max-Planck-Institut für Physikalische Chemie, Goettingen,

Studi sulle reazioni chimiche superveloci.

and the other half jointly to:



**1967**

**Ronald George Wreyford Norrish** (Great Britain, 9.11.1897 - 7.6.1978)

Great Britain, Institute of Physical Chemistry, Cambridge,

Studi sulle reazioni chimiche superveloci.

and



**1967**

**Lord George Porter** (Great Britain, \*6.12.1920)

Great Britain, The Royal Institution, London,

*"for their studies of extremely fast chemical reactions, effected by disturbing the equilibrium by means of very short pulses of energy".*

Studi sulle reazioni chimiche superveloci.



**1968**

**Lars Onsager** (Oslo, Norway, 27.11.1903 - 5.10.1976)

USA, Yale University, New Haven, CT,

*"for the discovery of the reciprocal relations bearing his name, which are fundamental for the thermodynamics of irreversible processes".*

Studi sulla termodinamica dei processi irreversibili.



**1969**

The Prize was divided equally between:

**Sir Derek H. Barton** (Great Britain, \*8.9.1918)

Great Britain, Imperial College of Science and Technology, London,

Sviluppo del concetto di struttura chimica.

and



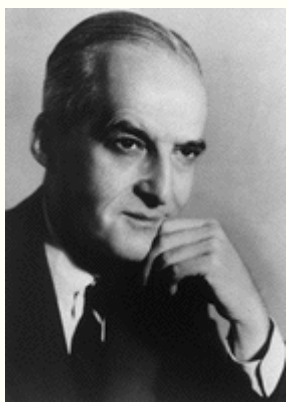
**1969**

**Odd Hassel** (Norway, 17.5.1897 - 13.5.1981)

Norway, Kjemisk Institutt, Oslo University, Oslo,

*"for their contributions to the development of the concept of conformation and its application in chemistry".*

Sviluppo del concetto di struttura chimica.



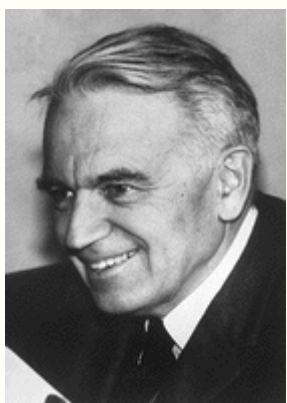
**1970**

**Luis F. Leloir** (Argentina, \*6.9.1906 - +1987)

Argentina, Institute for Biochemical Research, Buenos Aires,

*"for his discovery of sugar nucleotides and their role in the biosynthesis of carbohydrates".*

Studi sulla biosintesi dei carboidrati.



**1971**

**Gerhard Herzberg** (Hamburg, Germany, \*25.12.1904 - +1999)

Canada, National Research Council of Canada, Ottawa,

*"for his contributions to the knowledge of electronic structure and geometry of molecules, particularly free radicals".*

Studi sulla struttura elettronica e sulla geometria molecolare dei radicali liberi.



**1972**

The Prize was divided, one half being awarded to:

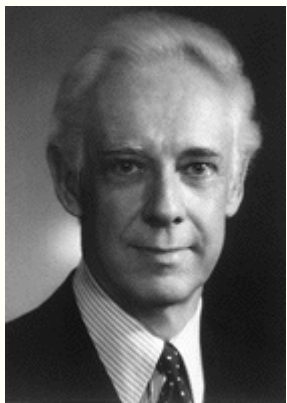
**Christian B. Anfinsen** (USA, \*26.3.1916 - +1995)

USA, National Institutes of Health, Bethesda, MD,

*"for his work on ribonuclease, especially concerning the connection between the amino acid sequence and the biologically active conformation";*

Studi sulla ribonucleasi.

and the other half jointly to:



**1972**

**Stanford Moore** (USA, 4.9.1913 - 23.8.1982)

USA, Rockefeller University, New York, NY

Studi sul sito attivo della ribonucleasi.

and



**1972**

**William H. Stein** (USA, 25.6.1911 - 2.2.1980)

USA, Rockefeller University, New York, NY,

*"for their contribution to the understanding of the connection between chemical structure and catalytic activity of the active centre of the ribonuclease molecule".*

Studi sul sito attivo della ribonucleasi.



**1973**

The Prize was divided equally between:

**Ernst Otto Fischer** (Germany, \*10.11.1918)

Federal Republic of Germany, Technical University of Munich, Munich,

Chimica dei composti organometallici.

and



**1973**

**Sir Geoffrey Wilkinson** (Great Britain, \*14.7.1921 - +1996)

Great Britain, Imperial College, London,

*"for their pioneering work, performed independently, on the chemistry of the organometallic, so called sandwich compounds".*

Chimica dei composti organometallici.



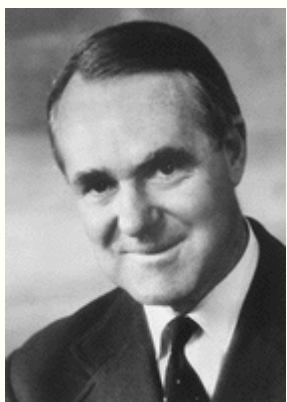
**1974**

**Paul J. Flory** (USA, 19.6.1910 - 9.9.1985)

USA, Stanford University, Stanford, CA,

*"for his fundamental achievements, both theoretical and experimental, in the physical chemistry of the macromolecules"*.

Chimica-fisica delle macromolecole.



**1975**

The Prize was divided equally between:

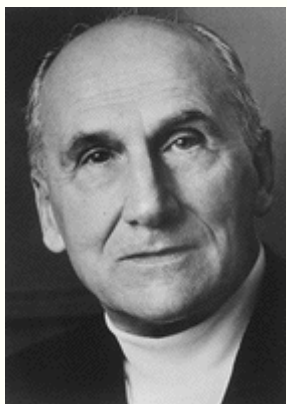
**John Warcup Cornforth** (Great Britain, \*7.9.1917)

Great Britain, University of Sussex, Brighton,

*"for his work on the stereochemistry of enzyme-catalyzed reactions"*;

Stereochimica delle reazioni enzimatiche.

and



**1975**

**Vladimir Prelog** (Sarajevo then Yugoslavia, \*23.7.1906 - +1998)

Switzerland, Eidgenössische Technische Hochschule, Zürich,

*"for his research into the stereochemistry of organic molecules and reactions"*.

Studi sulla stereochimica delle molecole e delle reazioni organiche.



**1976**

**William N. Lipscomb** (USA, \*9.12.1919)

USA, Harvard University, Cambridge, MA,

*"for his studies on the structure of boranes illuminating problems of chemical bonding"*.

Studi sulla struttura dei borani.



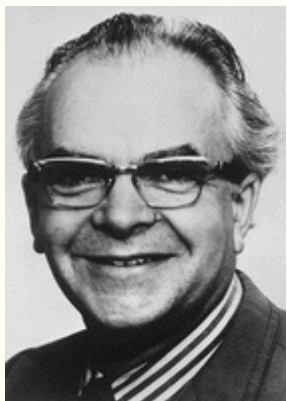
**1977**

**Ilya Prigogine** (Moscow, Russia, \*25.1.1917)

Belgium, Université Libre de Bruxelles, Brussels (University of Texas, USA),

*"for his contributions to non-equilibrium thermodynamics, particularly the theory of dissipative structures".*

Studi sulla termodinamica dei processi irreversibili.



**1978**

**Peter D. Mitchell** (Great Britain, 29.9.1920 - +1992)

Great Britain, Glynn Research Laboratories, Bodmin,

*"for his contribution to the understanding of biological energy transfer through the formulation of the chemiosmotic theory".*

Sviluppo della teoria chemiosmotica.



**1979**

The Prize was divided equally between:

**Herbert C. Brown** (London, Great Britain, \*22.5.1912)

USA, Purdue University, West Lafayette, IN,

Scoperta di composti organici di fosforo e boro.

and



**1979**

**Georg Wittig** (Germany, 16.6.1897 - 26.8.1987)

Federal Republic of Germany, University of Heidelberg,

*"for their development of the use of boron- and phosphorus-containing compounds, respectively, into important reagents in organic synthesis".*

Scoperta di composti organici di fosforo e boro.



**1980**

The Prize was divided, one half being awarded to:

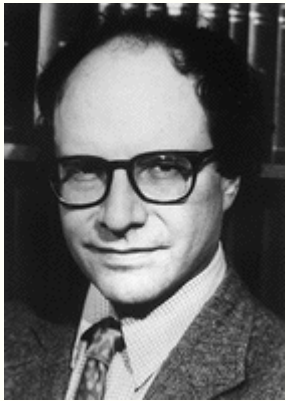
**Paul Berg** (USA, \*30.6.1926)

USA, Stanford University, Stanford, CA,

*"for his fundamental studies of the biochemistry of nucleic acids, with particular regard to recombinant-DNA";*

Studi sulla biochimica degli acidi nucleici, in particolare del DNA ibrido.

e l'altra metà in unione con:



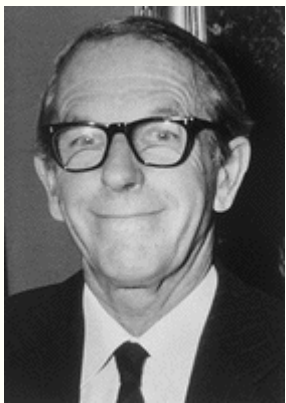
**1980**

**Walter Gilbert** (USA, \*21.3.1932)

USA, Biological Laboratories, Cambridge, MA,

Determinazione delle sequenze di basi negli acidi nucleici.

and



**1980**

**Frederick Sanger** (Great Britain, 13.8.1918)

USA, Great Britain, MRC Laboratory of Molecular Biology, Cambridge,

*"for their contributions concerning the determination of base sequences in nucleic acids".*

Determinazione delle sequenze di basi negli acidi nucleici.



**1981**

The Prize was awarded jointly to:

**Kenichi Fukui** (Japan, \*4.10.1918 - +1998)

Japan, Kyoto University, Kyoto,

Teorie sulle reazioni chimiche (teorie sugli orbitali esterni).

and

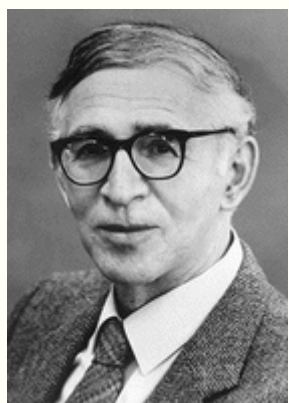


**Roald Hoffmann** (Zloczow, Poland, \*18.7.1937)

USA, Cornell University, Ithaca, NY,

*"for their theories, developed independently, concerning the course of chemical reactions".*

Teorie sulle reazioni chimiche (teorie sugli orbitali esterni).



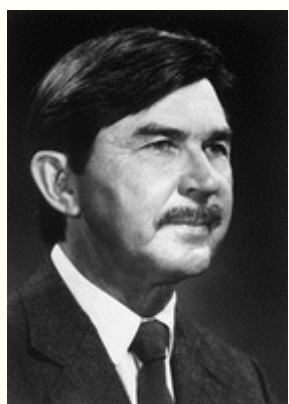
**1982**

**Sir Aaron Klug** (Lithuania, \*11.8.1926)

Great Britain, MRC Laboratory of Molecular Biology, Cambridge,

*"for his development of crystallographic electron microscopy and his structural elucidation of biologically important nuclei acid-protein complexes".*

Sviluppo di metodi cristallografici per la determinazione di strutture di proteine.



**1983**

**Henry Taube** (Saskatoon, Canada, \*30.11.1915)

USA, Stanford University, Stanford, CA,

*"for his work on the mechanisms of electron transfer reactions, especially in metal complexes".*

Meccanismi di reazione con trasferimento di elettroni, in particolare nei complessi metallici.



**1984**

**Robert Bruce Merrifield** (USA, \*15.7.1921)

USA, Rockefeller University, New York, NY,

*"for his development of methodology for chemical synthesis on a solid matrix".*

Metodi per la preparazione di peptidi e proteine.



**1985**

The Prize was awarded jointly to:

**Herbert A. Hauptman** (USA, 14.2.1917)

USA, The Medical Foundation of Buffalo, Buffalo, NY,

Sviluppo di metodi per la determinazione delle strutture cristalline.

and



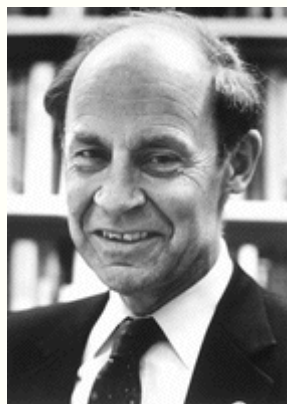
**1985**

**Jerome Karle** (USA, 18.6.1918)

USA, US Naval Research Laboratory, Washington, DC,

*"for their outstanding achievements in the development of direct methods for the determination of crystal structures"*.

Sviluppo di metodi per la determinazione delle strutture cristalline.



**1986**

The Prize was awarded jointly to:

**Dudley R. Herschbach** (USA, \*18.6.1932)

USA, Harvard University, Cambridge, MA,

Dinamica di processi chimici elementari.



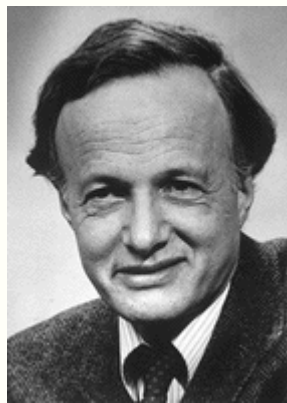
**1986**

**Yuan Tseh Lee** (Hsinchu, Taiwan, \*29.11.1936)

USA, University of California, Berkeley, CA,

Dinamica di processi chimici elementari.

and



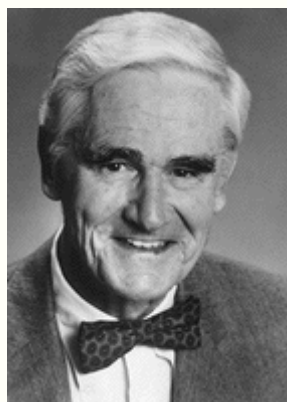
**1986**

**John C. Polanyi** (Canada, \*23.1.1929)

Canada, University of Toronto, Toronto,

*"for their contributions concerning the dynamics of chemical elementary processes".*

Dinamica di processi chimici elementari.



**1987**

The Prize was awarded jointly to:

**Donald J. Cram** (USA, \*22.4.1919)

USA, University of California, Los Angeles, CA,

Sviluppo di modelli molecolari complessi.



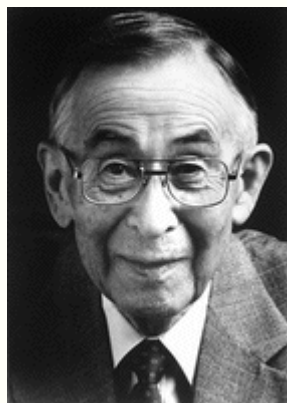
**1987**

**Jean-Marie Lehn** (France, \*30.9.1939)

France, Université Louis Pasteur, Strasbourg, and Collège de France, Paris,

Sviluppo di modelli molecolari complessi.

and



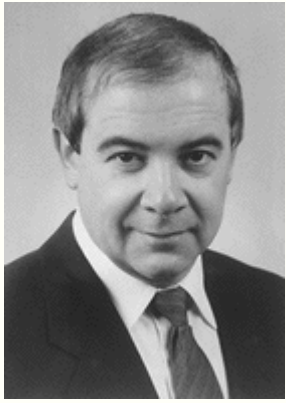
**1987**

**Charles J. Pedersen** (Fusan, Korea, as a Norwegian citizen, 3.10.1904 - 26.10.1989)

USA, Du Pont, Wilmington, DE,

*"for their development and use of molecules with structure-specific interactions of high selectivity".*

Sviluppo di modelli molecolari complessi.



**1988**

The Prize was awarded jointly to:

**Johann Deisenhofer** (Germany, \*30.9.1943)

Federal Republic of Germany, Howard Hughes Medical Institute and Department of Biochemistry,  
University of Texas Southwestern Medical Center at Dallas, TX,

Determinazione della struttura 3D in un centro di reazione di fotosintesi.



**1988**

**Robert Huber** (Germany, \*20.2.1937)

Federal Republic of Germany, Max-Planck-Institut für Biochemie, Martinsried,

Determinazione della struttura 3D in un centro di reazione di fotosintesi.

and



**1988**

**Hartmut Michel** (Germany, \*18.7.1948)

Federal Republic of Germany, Max-Planck-Institut für Biophysik, Frankfurt/Main,

*"for the determination of the three-dimensional structure of a photosynthetic reaction centre".*

Determinazione della struttura 3D in un centro di reazione di fotosintesi.



**1989**

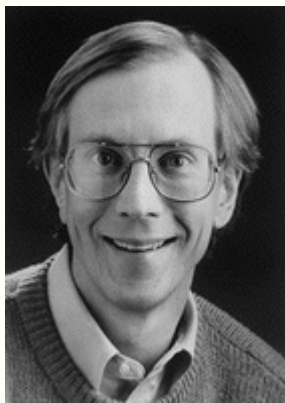
The Prize was awarded jointly to:

**Sidney Altman** (Canada, \*8.5.1939)

USA, Yale University, New Haven, CT,

Scoperta delle proprietà catalitiche dell' RNA.

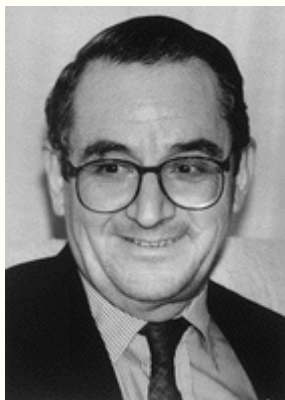
and



**1989**

**Thomas Robert Cech** (USA, \*8.12.1947)  
USA, University of Colorado, Boulder, CO,  
*"for their discovery of catalytic properties of RNA"*.

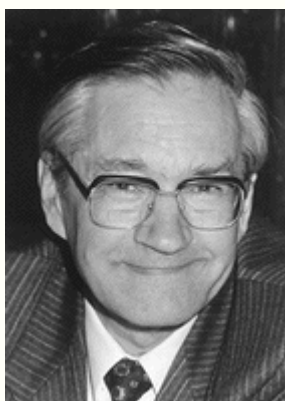
Scoperta delle proprietà catalitiche dell' RNA.



**1990**

**Elias James Corey** (USA, \*12.7.1928)  
USA, Harvard University, Cambridge, MA,  
*"for his development of the theory and methodology of organic synthesis"*.

Sviluppo di nuovi metodi per la sintesi di composti naturali complessi.



**1991**

**Richard Robert Ernst** (Switzerland, \*14.8.1933)  
Switzerland, Eidgenössische Technische Hochschule, Zürich,  
*"for his contributions to the development of the methodology of high resolution nuclear magnetic resonance (NMR) spectroscopy"*.

Sviluppo della risonanza magnetica nucleare (NMR).

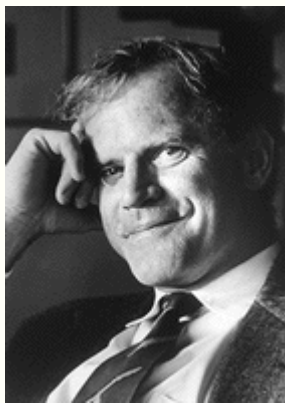
[Richard Robert Ernst](#)



**1992**

**Rudolph A. Marcus** (Canada, \*21.7.1923)  
USA, California Institute of Technology, Pasadena, CA,  
*"for his contributions to the theory of electron transfer reactions in chemical systems"*.

Teorie sul trasferimento di elettroni.



**1993**

The Prize was awarded *"for contributions to the developments of methods within DNA-based chemistry"*, by one half to:

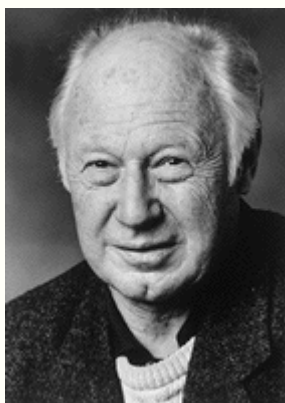
**Kary Banks Mullis** (USA, \*1944)

USA, La Jolla, CA,

*"for his invention of the polymerase chain reaction (PCR) method"*,

Scoperta della reazione a catena della polimerasi.

and by the other half to:



**1993**

**Michael Smith** (Blackpool, England, \*26.4.1932)

Canada, University of British Columbia, Vancouver,

*"for his fundamental contributions to the establishment of oligonucleotide- based, site-directed mutagenesis and its development for protein studies"*.

Sviluppo della mutagenesi di un particolare sito.



**1994**

**George A. Olah** (Budapest, Hungary, \*1927)

USA, University of Southern California, CA,

*"for his contribution to carbocation chemistry"*.

Studi sui carbocationi.

**George A. Olah**



**1995**

The Prize was awarded jointly to:

**Paul Crutzen** (Amsterdam, the Netherlands, \*1933)

Germany, Max-Planck-Institute for Chemistry, Mainz,

Studi sulla decomposizione dell'ozono atmosferico.



**1995**

**Mario J. Molina** (Mexico City, Mexico, \*1943)  
U.S.A, MIT, Cambridge, MA,

Studi sulla decomposizione dell'ozono atmosferico.

and



**1995**

**Sherwood F. Rowland** (USA, \*1927)  
USA, University of California, Irvine, CA,

*"for their work in atmospheric chemistry, particularly concerning the formation and decomposition of ozone".*

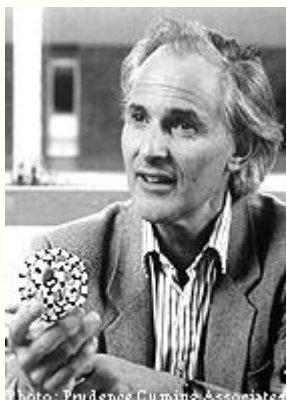
Studi sulla decomposizione dell'ozono atmosferico.



**1996**

The Prize was awarded jointly to:  
**Robert F. Curl, Jr.** (USA, \*1933)  
USA, Rice University, Houston,

Scoperta dei fullereni.



**1996**

**Sir Harold W. Kroto** (Great Britain, \*1939)  
Great Britain, University of Sussex, Brighton,

Scoperta dei fullereni.

and



**1996**

**Richard E. Smalley** (USA, \*1943)

USA, Rice University, Houston,

*"for their discovery of fullerenes"*.

Scoperta dei fullereni.



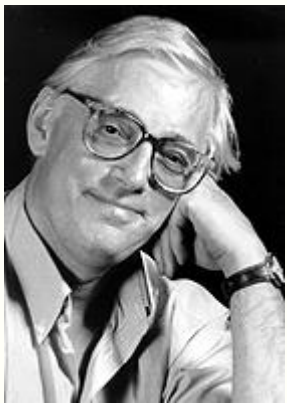
**1997**

The Prize was awarded by one half to:

**Paul D. Boyer** (USA, \*1918)

USA, University of California, Los Angeles,

Studi sui meccanismi enzimatici nella sintesi di ATP.



**1997**

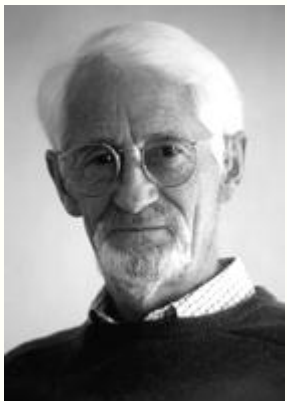
**John E. Walker** (Great Britain, \*1941)

Great Britain, Medical Research Council Laboratory of Molecular Biology, Cambridge,

*"for their elucidation of the enzymatic mechanism underlying the synthesis of adenosine triphosphate (ATP)"*,

Studi sui meccanismi enzimatici nella sintesi di ATP.

and by the other half to



**1997**

**Jens C. Skou** (Denmark, \*1918)

Denmark, Aarhus University

*"the first discovery of an ion-transporting enzyme,  $Na^+$ ,  $K^+$ -ATPase"*.

Studi sugli enzimi trasportatori di ioni.



**1998**

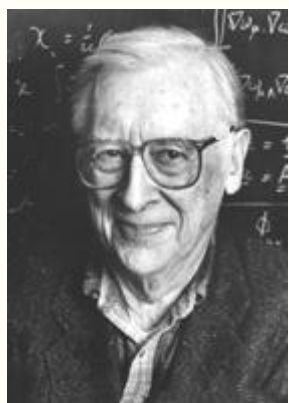
The Prize was awarded jointly to:

**Walter Kohn** (USA, \*1923)

USA, University of California at Santa Barbara,

Sviluppo delle teorie sulla densità funzionale.

and



**1998**

**John A. Pople** (USA, \*1925)

USA, Northwestern University,

*"to Walter Kohn for his development of the density-functional theory and to John Pople for his development of computational methods in quantum chemistry".*

Sviluppo di metodi di calcolo nella chimica quantistica.

**1999**

**Ahmed H. Zewail** (Egypt, \*1946)

USA, California Institute of Technology, Pasadena,

*"for his studies of the transition states of chemical reactions using femtosecond spectroscopy".*

Dimostrazione della possibilità di osservare il movimento degli atomi in una molecola durante una reazione mediante la tecnica del laser veloce; per gli studi degli stati di transizione di una reazione chimica con l'uso della spettroscopia a femtosecondi.

**Ahmed H. Zewail**



**2000**

**Alan Heeger** (USA, 1936)



**Alan Mac Diarmid** (USA, 1927)



**Hideki Shirakawa** (Giappone, 1936)



Sviluppo degli studi sui polimeri drogati conduttori, in particolare sul poliacetilene.

**2001**



**William S. Knowles** (USA, 1917)



**K. Barry Sharpless** (USA, 1941)

Studi sulle reazioni di ossidazione catalizzate chiralmente.



**Ryoji Noyori** (Giappone, 1938)

Studi sulle reazioni di idrogenazione catalizzate chiralmente.

**2002**



**John B. Fenn** (USA, 1917)



**Koichi Tanaka** (Giappone, 1959)

Sviluppo degli studi sulla spettrometria di massa di macromolecole biologiche.



**Kurt Wüthrich** (Svizzera, 1939)

Sviluppi della spettroscopia NMR nella determinazione della struttura tridimensionale di macromolecole biologiche in soluzione.

**2003**



**Peter Agre** (USA, 1949)

Per le scoperte riguardo i canali nelle membrane cellulari e la scoperta dei canali acqueei.



**Roderick MacKinnon** (USA, 1956)

Per gli studi sulla struttura e l'attività dei canali ionici.

**2004**



**Aaron Ciechanover** (Israele 1947)



**Avram Hershko** (Israele, 1937)



**Irwin Rose** (USA, 1926)

Per gli studi sul decadimento regolato delle proteine ubiquitarie.

2005

**Robert H. Grubbs** (USA 1942)



**Richard Royce Schrock** (USA 1945)



**Yves Chauvin** (Francia 1930)



Per lo sviluppo del metodo della metatesi nella sintesi organica

2006

**Roger David Kornberg** (USA 1947)



Per i suoi studi sulle basi molecolari della trascrizione eucariotica

2007

**Gerhard Ertl** (Germania 1936)

Per i suoi studi dei processi chimici sulle superfici solide



2008

**Osamu Shimomura** (USA/Giappone 1928)



**Martin Chalfie** (USA 1948)



**Roger Y. Tsien** (Francia 1952)



Per la scoperta della Proteina fluorescente verde (Gfp) utilizzata come marcatore medico

2009

**Venkatraman Ramakrishnan** (Regno Unito/India 1952)



**Thomas A. Steitz** (USA 1940)



**Ada E. Yonath** (Israele 1939)



Per gli studi sulla struttura e sulla funzione dei ribosomi

**2010**

**Richard Heck** (USA 1931)



**Ei-ichi Negishi** (USA/Giappone 1935)



**Akira Suzuki** (Giappone 1930)



Per gli accoppiamenti incrociati catalizzati dal palladio nella sintesi organica