

# GRAPHICAL ANECDOTES

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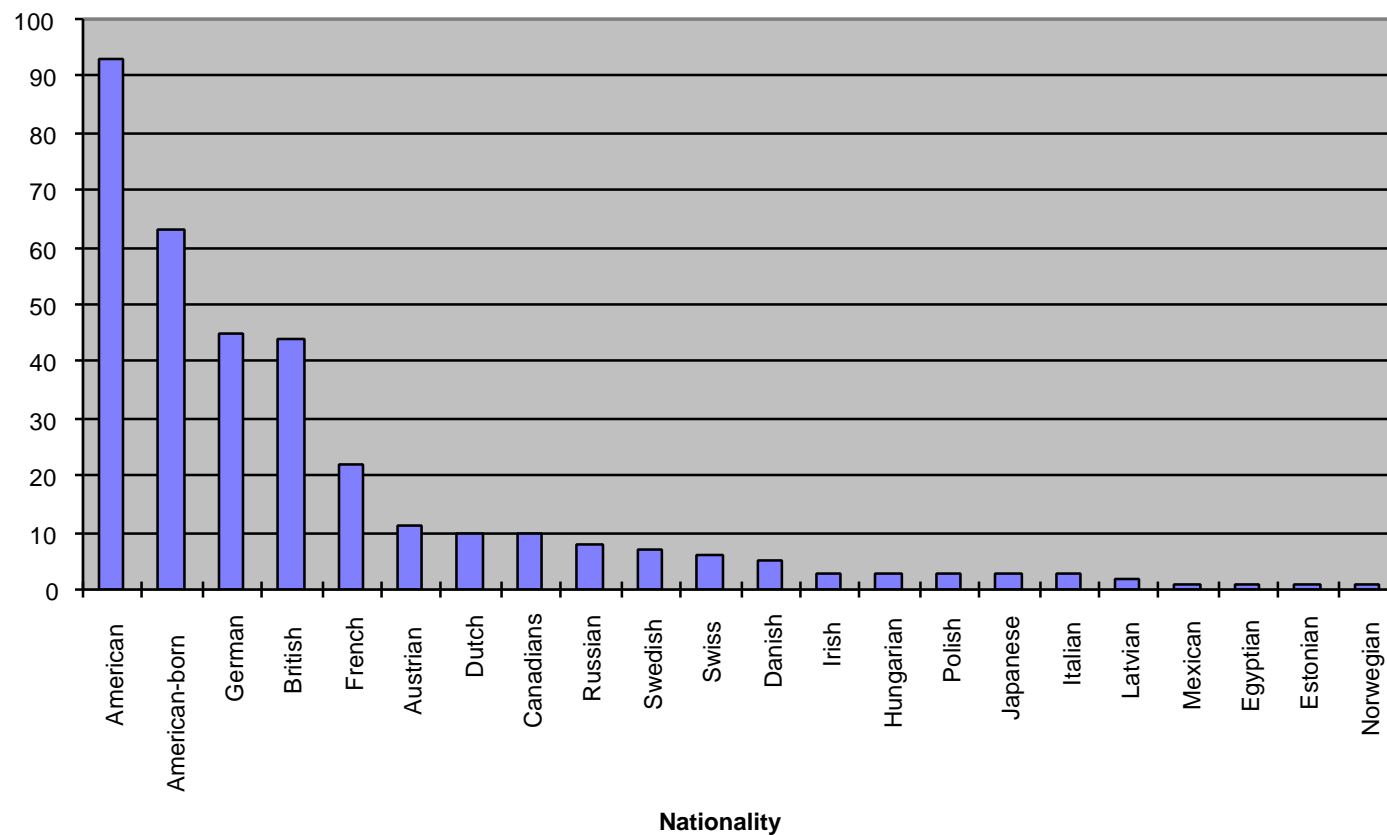
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## (1) Fundamental Ideas in Chemistry

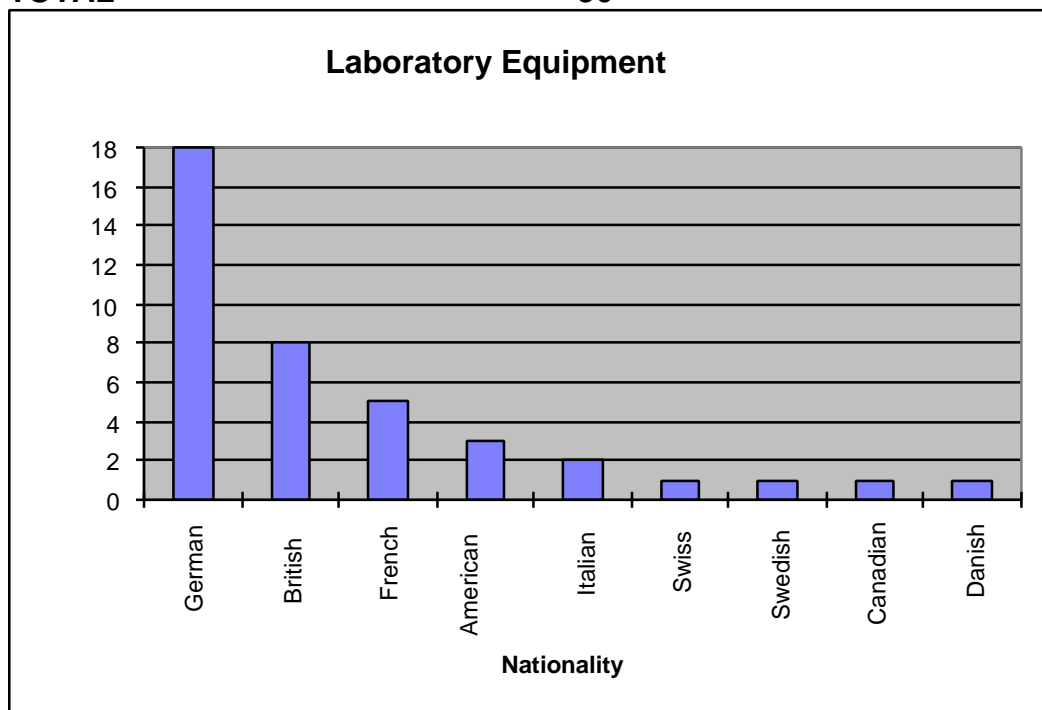
<b>Nationality</b>	<b>Number of Scientists</b>
American	93
American-born	63
German	45
British	44
French	22
Austrian	11
Dutch	10
Canadians	10
Russian	8
Swedish	7
Swiss	6
Danish	5
Irish	3
Hungarian	3
Polish	3
Japanese	3
Italian	3
Latvian	2
Mexican	1
Egyptian	1
Estonian	1
Norwegian	1
<b>TOTAL</b>	<b>345</b>

### Fundamental Chemistry Concepts and Equations: Demography



## (2) Laboratory Apparatus

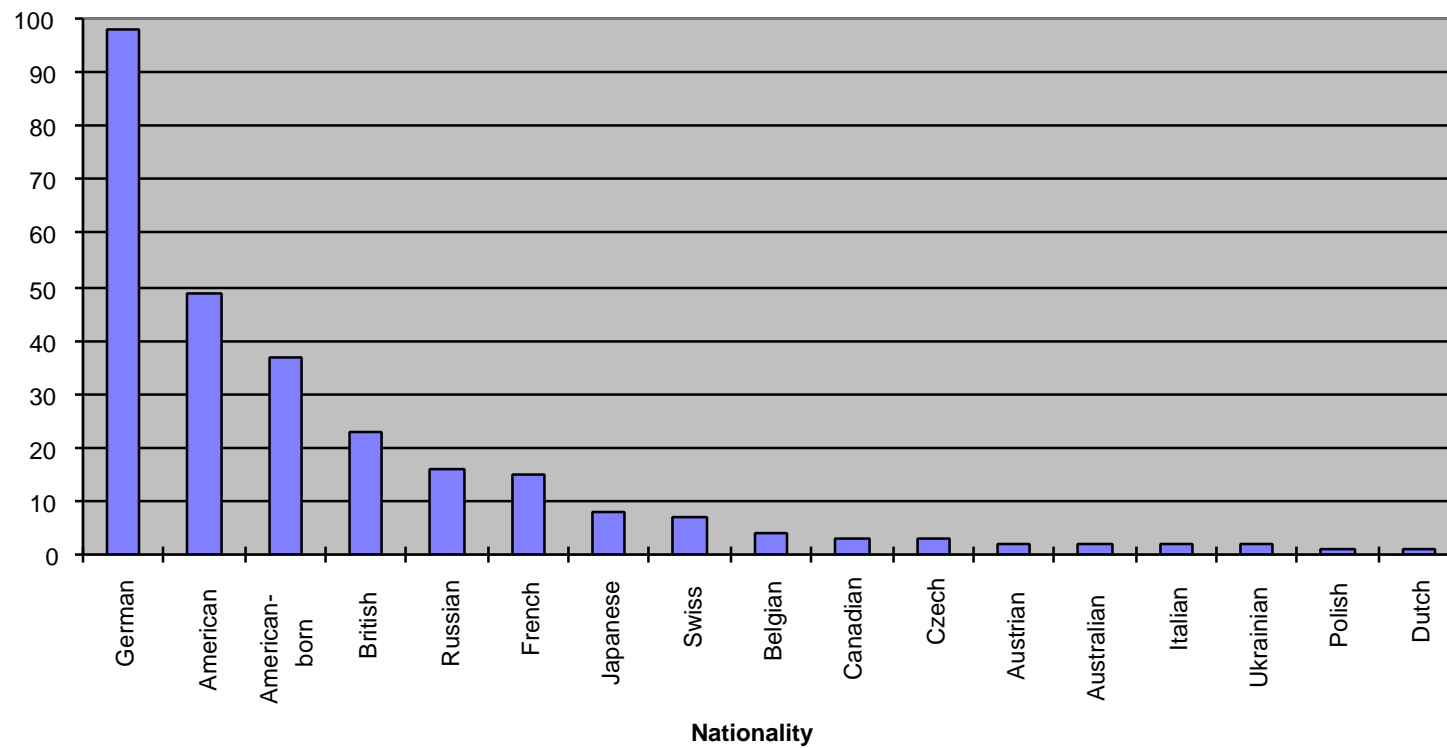
Nationality	Number of Chemists
German	18
British	7
French	4
Italian	2
American	2
Swedish	1
Danish	1
Swiss	1
<b>TOTAL</b>	<b>36</b>



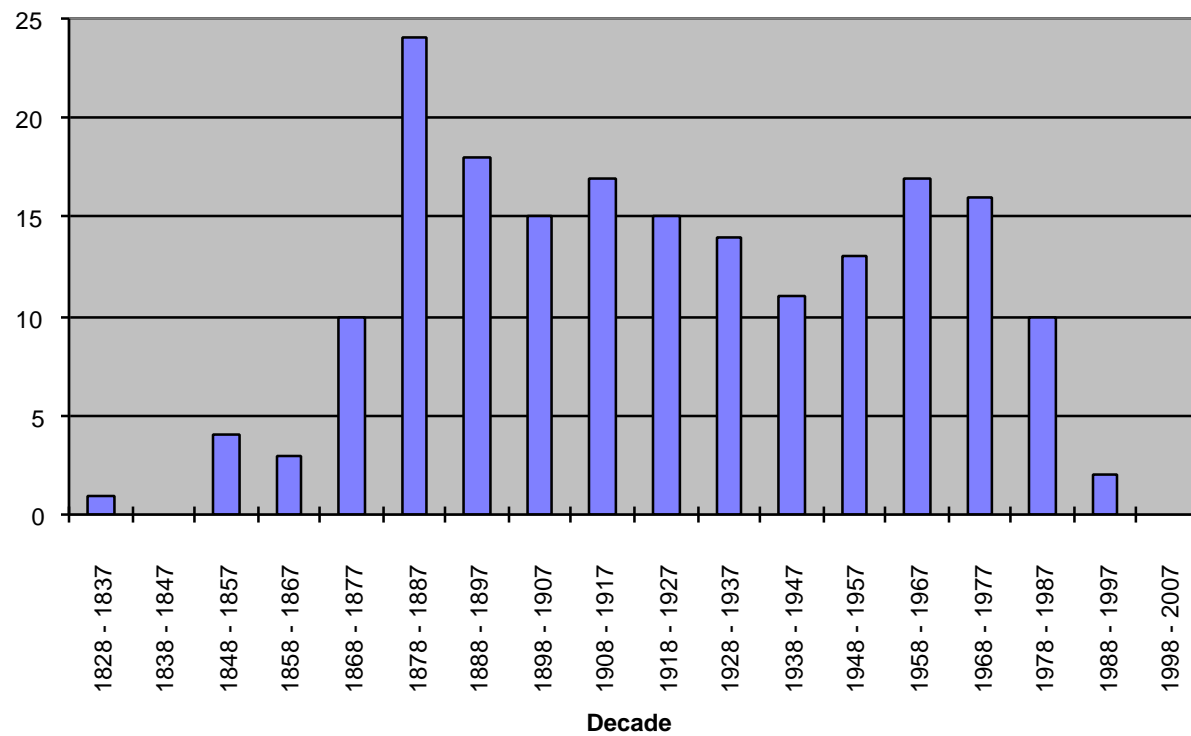
### (3) Named Organic Reactions

<b>Nationality</b>	<b>Number of Chemists</b>	
German	98	
American	49	
American-born	37	
British	23	
Russian	16	
French	15	
Japanese	8	
Swiss	7	
Belgian	4	
Canadian	3	
Czech	3	
Austrian	2	
Australian	2	
Italian	2	
Ukrainian	2	
Polish	1	
Dutch	1	
<b>TOTAL</b>	<b>273</b>	

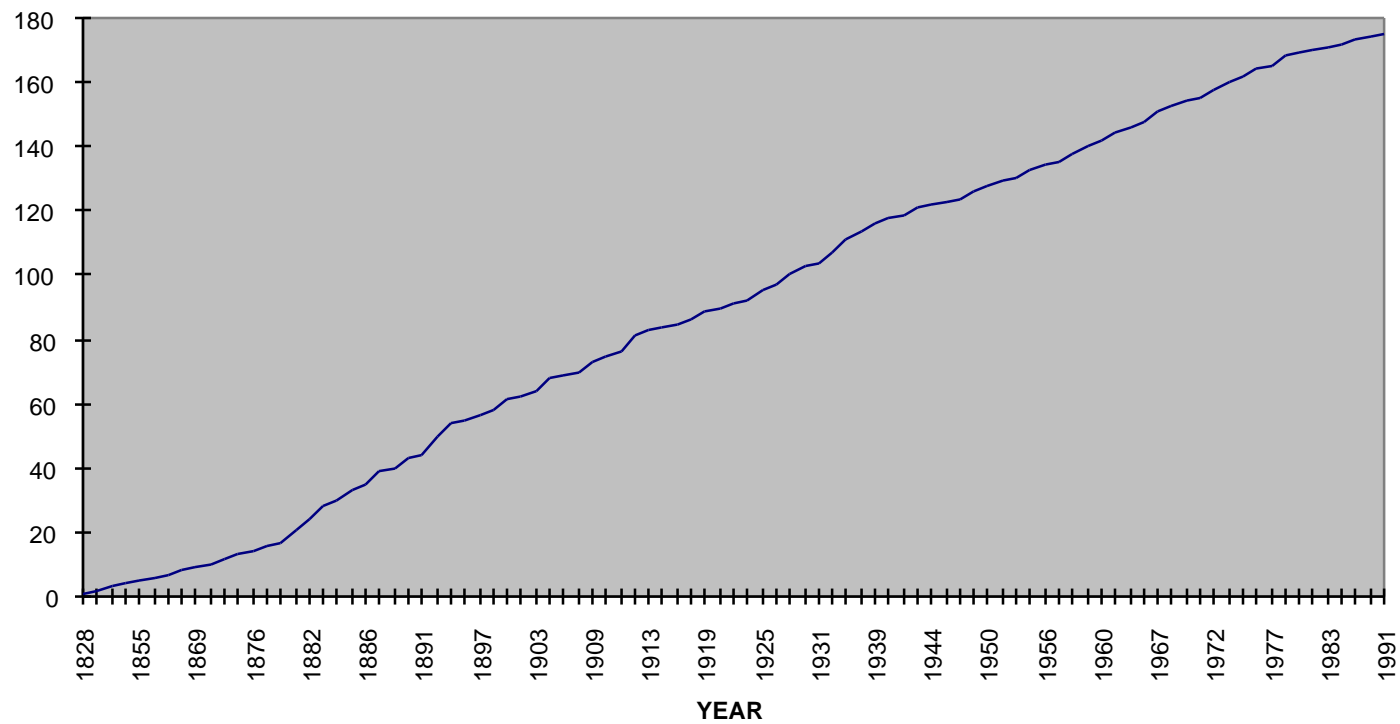
### Organic Name Reactions: Demography



### Organic Name Reactions: Timeline



## CUMULATIVE GROWTH OF NEW NAMED ORGANIC REACTIONS SINCE WOHLER'S UREA SYNTHESIS



<b>Decade</b>	<b>Number of Named Reactions Discovered</b>
1828 - 1837	1
1838 - 1847	0
1848 - 1857	4
1858 - 1867	3
1868 - 1877	10
1878 - 1887	24
1888 - 1897	18
1898 - 1907	15
1908 - 1917	17
1918 - 1927	15
1928 - 1937	14
1938 - 1947	11
1948 - 1957	13
1958 - 1967	17
1968 - 1977	16
1978 - 1987	10
1988 - 1997	2
1998 - 2007	0
<b>TOTAL</b>	<b>190</b>

**Year**      **Named Reactions**

1828 Wohler urea synthesis  
1850 Strecker amino acid synthesis  
1852 Williamson ether synthesis  
1853 Cannizzaro  
1855 Wurtz  
1858 Griess diazotization  
1860 Kolbe-Schmitt  
1864 Wurtz-Fittig  
1868 Perkin reaction  
1869 Glaser coupling  
1870 Perkin rearrangement  
1871 Hofmann rearrangement, von Richter  
1872 Lossen rearrangement, Beilstein  
1876 Reimer-Tiemann  
1877 Friedel-Crafts acylation and alkylation  
1880 Skraup, Wallach  
1881 Claisen-Schmidt, Hell-Volhard-Zelinsky, Hofmann elimination, Etard  
1882 Friedlander, Hantzsch pyridine synthesis, Tollens test  
1883 Doebner-Miller, Fischer indole synthesis, Hofmann-Löffler-Freytag, von Pechmann  
1884 Schotten-Baumann, Sandmeyer, Elbs  
1885 Kiliiani-Fischer, Paal-Knorr, Leuckart  
1886 Beckmann rearrangement, Knorr  
1887 Claisen condensation, Gabriel, Michael addition, Reformatskii  
1888 Japp-Klingemann  
1890 Curtius, Gatterman, Menshutkin  
1891 Tiemann rearrangement  
1893 Bischler-Napieralski, Fenton, Ruff-Fenton, Stobbe condensation, Wohl degradation  
1894 Bamberger rearrangement, Frisch-Buttenberg-Wiechell, Dieckmann, Nef  
1895 Delepine, Fischer esterification, Henry  
1897 Gatterman-Koch  
1898 Arbuzov-Michaelis, Knoevenagel condensation  
1899 Baeyer-Villager oxidation, Chugaev, Wagner-Meerwein rearrangement  
1900 Grignard

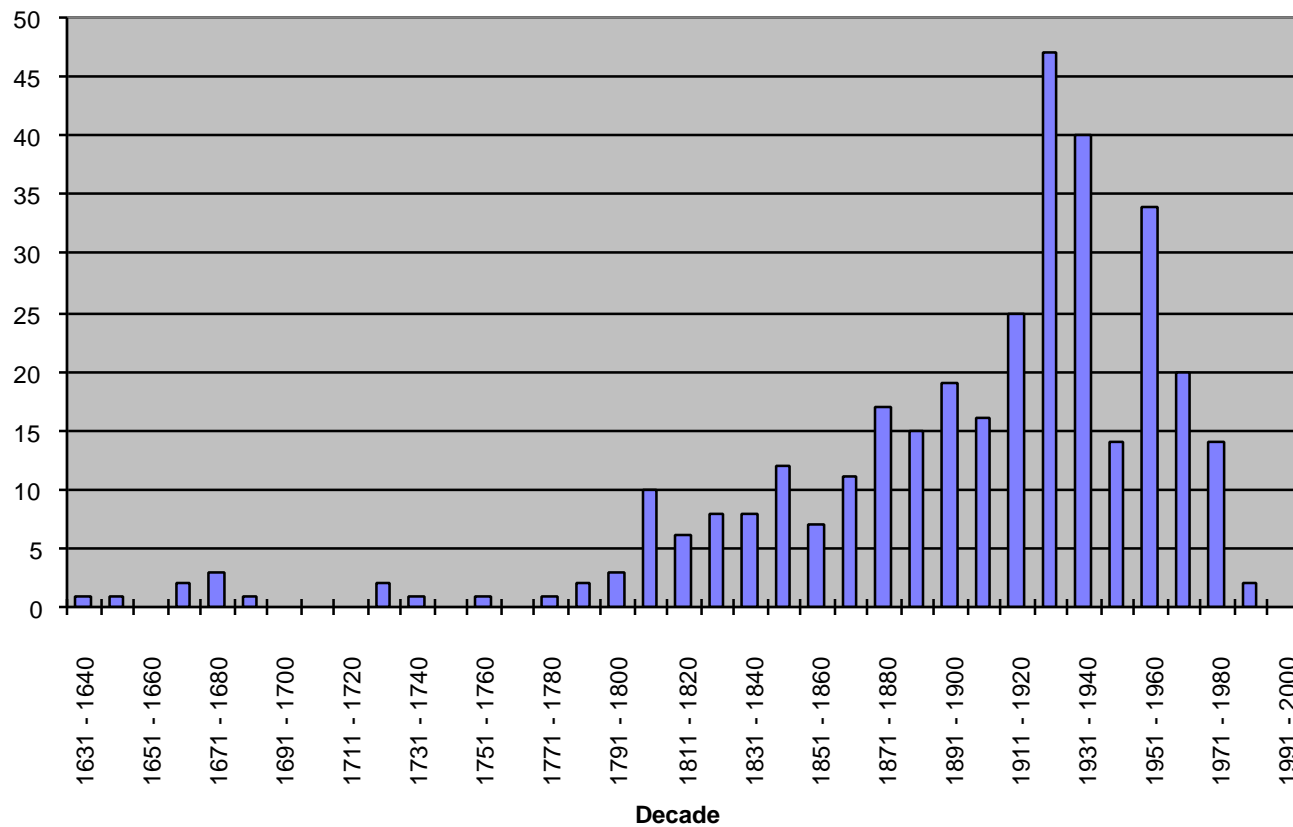
1903 Bouveault-Blanc, Tiffeneau-Demjanov rearrangement  
1904 Bucherer, Darzens, Thorpe, Ullmann  
1905 Eschweiler-Clarke, Harries ozonolysis  
1906 Tishenko  
1908 Fries rearrangement  
1909 Paterno-Buchi, Willgerodt, Prilezhaev, Benedict test  
1910 Pummerer rearrangement, Finkelstein  
1911 Wolff-Kishner reduction  
1912 Barbier-Wieland, Claisen rearrangement, Maillard, Mannich, Wolff rearrangement  
1913 Clemmensen reduction, Favorskii rearrangement  
1914 Chichibabin  
1915 Houben-Hoesch  
1918 Rosenmund reduction  
1919 Meisenheimer, Staudinger, Prins  
1922 Meyer-Schuster rearrangement  
1923 Fischer-Tropsch process  
1924 Bachmann-Gomberg  
1925 Chapman rearrangement, Meerwein-Ponndorf-Verley, Stephen reduction  
1926 Neber, Rupe rearrangement  
1927 Vilsmeier-Haack, Schiemann, Polonovski  
1928 Diels-Alder, Stevens rearrangement, Dakin-West reaction  
1931 Criegee  
1935 Arndt-Eistert synthesis, Robinson annulation, Smiles rearrangement  
1936 Hooker oxidation, McFadyen-Stevens rearrangement, Norrish Type I/II  
1937 Hammick, Sommelet-Hauser, Oppenauer oxidation  
1939 Meerwein arylation, Marschalk  
1940 Ramberg-Bäcklund, Cope rearrangement  
1941 Dakin  
1942 Borodin-Hunsdiecker, Wittig rearrangement  
1944 Birch reduction, Bartlett-Condon-Schneider  
1945 Kharasch cyclization  
1946 Jones oxidation  
1948 Ritter

1949 Cope elimination, Cornforth rearrangement  
1950 Edman degradation, Wessely oxidation  
1952 Bamford-Stevens  
1953 Sarett procedure  
1954 Eglinton, Stork enamine synthesis, Wittig reaction  
1955 Grob fragmentation  
1956 Lemieux-Johnson oxidation  
1957 Cadiot-Chodkevicz  
1958 Brook rearrangement, Horner-Emmons, Simmons-Smith cyclopropanation  
1959 McLafferty rearrangement, Wacker  
1960 Barton, Martynoff rearrangement, Wawzonek-Yeakey rearrangement  
1961 Wharton, Wadsworth-Emmons  
1963 Corey-Winter, Merrifield solid phase synthesis  
1965 Graham, Kochi  
1967 Kemp, Shapiro, Regitz diazo group transfer  
1968 Peterson oxidation, Weiss  
1970 Mitsunobu  
1972 Corey-Kim, Heck, Borch reduction, Bergman cyclization, Claisen-Ireland  
1973 Julia synthesis, Pauson-Khand  
1974 McMurry, Mukaiyama aldol  
1975 Ugi condensation, Dotz, Barton-McCombie  
1976 Stetter  
1977 Hosomi-Sukarai  
1978 Stille coupling, Swern oxidation, Murahashi, Still-Wittig  
1979 Suzuki coupling  
1980 Sharpless epoxidation  
1983 Dess-Martin oxidation, Nozaki  
1982 Mukaiyama  
1985 Noyori  
1989 Sharpless-Jacobsen hydroxylation, Kulinkovich

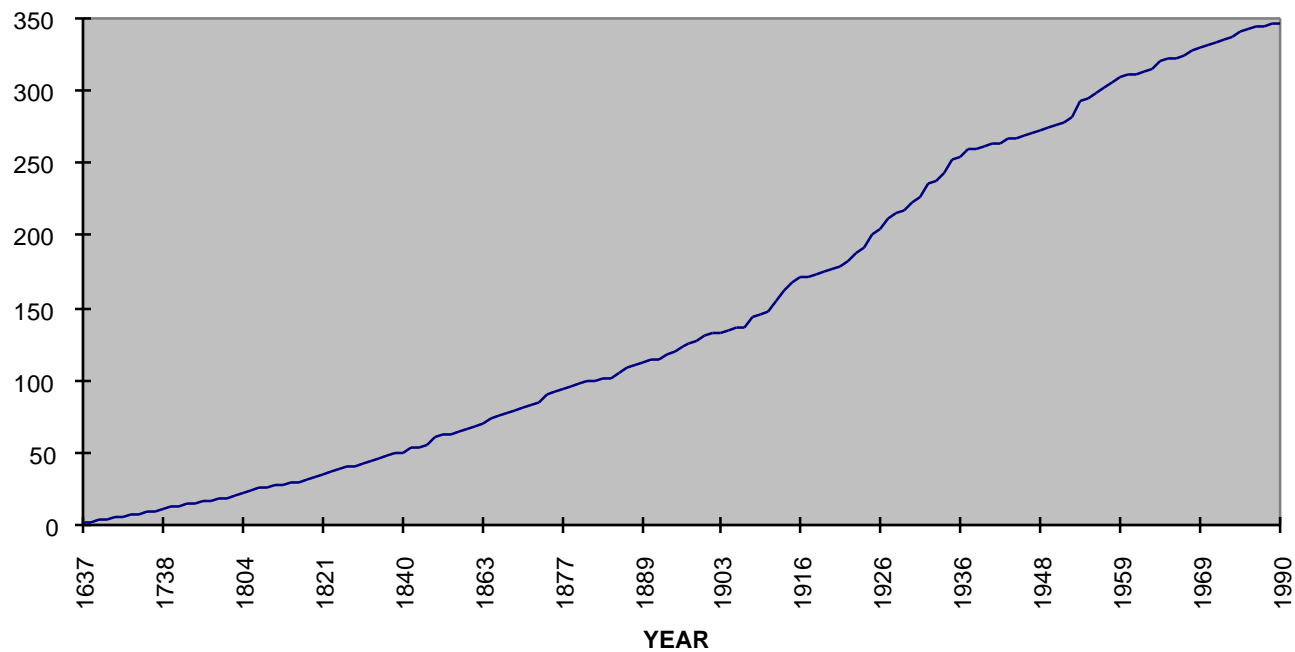
#### (4) Timeline of Ideas in Chemistry



## Named Fundamental Contributions to Chemistry: Timeline



### CUMULATIVE GROWTH OF NUMBER OF NAMED CONCEPTS DISCOVERED RELATING TO CHEMISTRY



FUNDAMENTAL DEVELOPMENTS BENEFICIAL TO CHEMISTRY: TIMELINE

<b>YEAR</b>	<b>CONCEPT</b>
1637	Snell's law of refraction
1644	Torricelli barometer
1662	Boyle's law
1663	Pascal's law of pressure
1672	Newton (dispersion of light)
1678	Hooke's law
1679	Fermat (refraction of light)
1690	Huygens principle
1724	Fahrenheit temperature scale
1729	Bouguer's law
1738	Bernoulli (kinetic theory of gases)
1760	Lambert's law
1775	Lavoisier's law
1787	Charles' law
1788	Coulomb's law
1791	Galvani (electric current)
1799	Proust's law
1800	Voltaic cell
1802	Dalton's law of partial pressures
1803	Black (discovery of latent and specific heat)

1804 Young (interference of light)  
1804 Henry's law  
1805 Dalton's law of multiple proportions  
1805 Dalton's law of solubility of gases in liquids  
1806 Grotthuss chain  
1807 Young's modulus of elasticity  
1808 Dalton's atomic theory  
1809 Gay-Lussac's law

1811 Avogadro Law  
1817 Fraunhofer diffraction, lines  
1819 Dulong-Petit law  
1820 Ampere's law  
1820 Oersted law (action of currents on magnets)  
1820 Biot-Savart law

1821 Mitscherlich (law of isomorphism)  
1822 Seebeck effect  
1822 Fourier heat theorem  
1824 Carnot cycle  
1826 Fresnel (diffraction of light)  
1826 Ohm's law  
1827 Brownian motion  
1830 Hamilton operator

1832 Henry (induction concept)  
1832 Berzelius (isomerism concept)  
1833 Graham's law  
1833 Faraday law  
1834 Lenz's law  
1834 Clapeyron equation of state  
1836 Berzelius/Ostwald (catalysis concept)  
1840 Hess' law

1841 Gauss (magnetic force measurement)  
1841 Joule's law  
1841 Grotthuss-Draper law  
1843 Joule (mechanical equivalent of heat)  
1847 Helmholtz (conservation of energy)  
1847 Doppler effect  
1848 Thomson absolute temperature scale (Kelvin)  
1848 Pasteur separation of racemic tartrates  
1848 Kelvin (absolute temperature scale)  
1848 Kohlrausch current theory  
1848 Bravais lattices  
1850 Clausius statement of second law of thermodynamics

1851 Hofmann rule  
1852 Beer-Lambert-Bouguer law  
1852 Stokes' law of fluorescence  
1855 Fick's first and second laws of diffusion  
1855 Mohr titration  
1858 Kirchhoff's laws (electrolytes)  
1858 Kirchhoff's law of heat radiation

1863 Kohlrausch relaxation  
1865 Joule-Thomson coefficient  
1865 Kekule structures  
1865 Maxwell electromagnetic equations  
1865 Loschmidt number  
1868 Angstrom length  
1869 Mendeleev's periodic law  
1869 Tyndall effect  
1869 Massieu functions  
1870 Markovnikov rule  
1870 Lorenz-Lorentz formula

1871 Maxwell's thermodynamic equations  
1873 van der Waals equation of state  
1874 van't Hoff-Le Bel asymmetric carbon model  
1874 McLeod vacuum gauge  
1875 Berthelot's equation  
1875 Maxwell-Boltzmann distribution  
1875 Gibbs equation  
1875 Gibbs free energy  
1875 Gibbs phase rule  
1875 Saytzeff rule  
1875 Kerr electro-optic effect  
1876 Viktor Meyer method  
1877 Kerr magneto-optic effect  
1877 Van't Hoff's law  
1879 Stefan law of temperature radiation  
1879 Hall effect  
1880 Curie law

1882 Helmholtz equation  
1882 Raoult's law  
1883 Reynolds number  
1884 Le Chatelier's principle  
1885 Balmer series  
1886 Allihn condenser  
1886 Gibbs-Duhem equation  
1886 Tait free path  
1887 van't Hoff theory of dilute solutions  
1887 Arrhenius (dissociation of ions in water)  
1887 Michelson-Morley experiment  
1888 Ostwald dilution law  
1888 van't Hoff's law of osmosis  
1889 Arrhenius equation

1889	Nernst equation
1890	Rydberg transition
1890	Rydberg formula
1891	Fischer projections
1893	Walden inversion rule
1893	Wien's displacement law
1893	Werner (configuration of inorganic compounds)
1894	Meyer steric hindrance
1895	Roentgen ray
1895	Dewar flask
1895	Perrin (negative charges in cathode rays)
1895	Cotton effect
1896	Becquerel, Curie (discovery of radioactivity)
1896	Fabry-Perot interferometer
1897	Zeeman effect
1897	Thompson (discovery of electron)
1900	Rayleigh-Jeans law
1900	Planck's equation, quanta concept
1900	Planck's radiation law
1900	Larmor precession frequency
1901	Pockels effect
1903	Thomson model of atom
1904	Langevin equation
1906	Nernst heat theorem
1906	Einstein model
1907	Davies condenser
1908	Paschen's series
1908	Vigreux column
1908	Haber process
1908	Henderson-Hasselbalch equation
1908	Ritz principle, procedure

1908	Henderson-Hasselbalch equation
1909	Sorensen pH scale
1909	Geiger counter
1910	Hill plot
1910	Knudsen vacuum gauge
1912	Debye model, T <sup>3</sup> law
1912	Einstein law
1912	Friedrichs condenser
1912	Bragg equation
1912	Laue symmetry groups
1912	Stark-Einstein law of photochemical equivalence
1912	Debye equation
1913	Bodenstein steady state approximation
1913	Michaelis-Menten equation
1913	Moseley's law
1913	Bohr model of the atom
1913	Gouy-Chapman diffuse double layer
1913	Fajan's bonding rules
1913	Stark effect
1913	Millikan oil drop experiment
1914	Lyman series
1914	Rutherford scattering
1916	Sommerfeld model
1916	Lewis structures
1916	Ehrenfest adiabatic theorem
1917	Smoluchowski equation
1917	Thiele tube
1918	Madelung series
1919	Stern-Volmer plot
1919	Dufton column
1920	Dean-Stark apparatus

1921	Bohr correspondence principle
1921	Lande g-factor
1922	Kasha-Vavilov rule
1922	Brackett series
1922	Stern-Gerlach experiment
1922	Townsend effect
1923	Bronsted catalysis law
1923	Bronsted-Lowry acid
1923	Debye-Huckel law
1923	Lewis acid
1923	Compton effect
1923	Gaede diffusion pump
1924	Pauli exclusion principle
1924	Pfund series
1924	Bredt's rule
1924	Bose-Einstein statistics
1925	de Broglie's law
1925	Ising model
1925	Hund's rules
1925	Russell-Saunders coupling
1925	Briggs-Haldane solution to Michaelis-Menten equation
1925	Haworth formulas
1925	Paschen-Back effect
1925	Laporte rule
1926	Guggenheim method
1926	Schrodinger equation
1926	Fermi-Dirac distribution
1926	Wigner's rules
1927	Born-Oppenheimer approximation
1927	Heitler-London treatment
1927	Heisenberg uncertainty principle
1927	Ehrenfest theorem
1927	Onsager limiting law

1927 Hinshelwood equation  
1927 Lennard-Jones potential  
1928 Raman spectroscopy  
1928 Hartree equation  
1928 Franck-Condon principle  
1928 Grotrian diagrams  
1929 Morse potential  
1929 Slater determinant  
1930 Slater orbital  
1930 Haldane equation  
1930 Haldane relationships  
1930 Hickman oil diffusion pump  
1930 London dispersion forces  
1930 Turner-Czerny optical arrangement

1931 Huckel molecular orbital theory  
1931 Jablonski diagram  
1931 Huckel  $4n + 2$  rule  
1931 Onsager reciprocal relations  
1932 Hammett acidity function  
1932 Pauling electronegativity scale  
1932 Wigner tunnelling correction  
1932 van Vleck paramagnetism  
1932 Hanes plot  
1932 Fenske equation  
1932 Langmuir adsorption isotherm  
1932 Langmuir equation  
1933 Koopmans theorem  
1933 Bell equation  
1933 Hellmann-Feynmann theorem  
1934 Badger rules and equation  
1934 Lineweaver-Burk plot  
1934 Kirkwood-Onsager equation

1934 Moller-Plesset single point energy calculation  
1934 Renner-Teller effect  
1934 Chadwick (discovery of neutron)  
1935 Teller-Redlich product rule  
1935 Baker-Nathan effect  
1935 Eyring equation  
1935 Hammett equation  
1935 Eyring transition state theory  
1935 Kreb's cycle  
1935 London equations  
1935 London equations (superconductivity)  
1936 Bell-Evans-Polanyi principle  
1936 Jahn-Teller effect  
1936 Gamow-Teller selection rule  
1937 Penning vacuum gauge  
1937 Krebs cycle  
1937 Fiegl spot tests  
1937 Langmuir-Blodgett film  
1938 Evans-Polanyi relation  
1939 Zucker-Hammett hypothesis  
1939 Evans principle  
1940 Pauli principle

1941 Fieser-Woodward rules  
1942 Eadie plot  
1942 Flory-Huggins theory  
1942 Wheland intermediate  
1944 Pirani vacuum gauge  
1946 Bloch equations  
1947 Bigeleisen-Wolfsberg equation  
1947 Bigeleisen-Goepper-Mayer heavy atom approximation  
1948 Grunwald-Winstein equation  
1948 Pake pattern

1949	Forster cycle
1949	Scatchard plot
1950	Hahn spin echoes
1950	Kasha's rule
1951	Hartree-Fock-Roothaan theory
1951	Cahn-Ingold-Prelog rules
1952	Fukui frontier molecular orbital theory
1952	Taft equation
1952	Dewar PMO method
1953	Dexter excitation transfer
1953	Frost polygon
1953	Leffler hypothesis
1953	Swain-Scott equation
1953	Nuclear Overhauser effect
1953	Walsh diagrams
1953	Shoolery rule
1953	Humphreys series
1953	Watson-Crick base pairing in DNA
1953	Mossbauer spectroscopy
1954	Curtin-Hammett principle
1954	Carr-Purcell experiment
1955	Hammond postulate
1955	Newman projection
1955	Winstein-Holness equation
1955	Mulliken population analysis
1956	Edwards equation
1956	Marcus equation
1956	King-Altman method
1956	Calvin cycle
1958	Kosower Z-values
1958	Dirac bracket notation
1958	Swain-Schaad equation

1959	Hofstee plot
1959	Yukawa-Tsuno equation
1959	Karplus equation
1959	Cram's rule
1960	Alder rule
1960	Berry pseudorotation
1961	Marcus-Hush relationship
1961	Schenck sensitization mechanism
1961	Westheimer principle
1962	Hartmann-Hahn experiment
1963	Schachtschneider method of vibrational frequency calculations
1963	Dimroth-Reichardt parameter
1963	Pearson's HSAB principle
1963	Cleland rules
1963	Hoogsteen base pairing
1963	Meuterties rule
1964	Eigen curve
1965	Woodward-Hoffmann rules
1966	Bunnett-Olsen equations
1966	Volkenstein-Goldstein method
1968	Swain-Lupton equation
1968	El-Sayed's rule
1969	Kaptein-Closs rules
1969	Benson's additivity rules
1970	More O'Ferrall-Jencks diagram
1970	Rehm-Weller equation
1972	Ritchie equation
1972	Kaptein's rules
1972	Koppel-Palm solvent parameters
1974	Cornish-Bowden plot
1975	Redfield sequence

1975	Sanger method of DNA sequencing
1976	Kamlet-Taft solvent parameters
1976	Davydov splitting
1976	Baldwin's rules
1977	Kaptein-Closs rules
1977	Jencks' clock
1977	Maxam-Gilbert method of DNA sequencing
1978	Cox-Yates acidity function
1979	Hansch constant
1985	Albery-Siebrand model
1990	Lever electrochemical parameters

### **Un-named concepts**

laws of chemical kinetics (van't Hoff)  
 law of osmotic pressure (van't Hoff)  
 theory of electrolytic dissociation (Arrhenius)  
 disintegration of the elements (Rutherford)  
 cell-free fermentation (Buchner)  
 co-ordination numbers in inorganic compounds (Werner)  
 mass spectrometry (Aston)  
 colloids (Zsigmondy/Svedberg)  
 microanalytical methods for organic substances (Pregl)  
 chemical high pressure methods (Bergius/Bosch)  
 discovery of deuterium (Urey)  
 synthesis of radioactive elements (Joliot)  
 nuclear fission (Hahn/Meitner)  
 crystallization of enzymes (Sumner)  
 electrophoresis (Tiselius)  
 absolute zero measurements (Giauque)  
 liquid-liquid and gas-liquid chromatography (Martin/Synge)  
 polymer chemistry (Staudinger)

hybridization in chemical bonding (Pauling)  
protein structures (alpha-helix; beta-sheet; kinks)  
combustion and explosives (Hinshelwood/Semenov)  
polarography (Heyrovsky)  
radio carbon dating (Libby)  
time resolved spectroscopy and kinetics (Norrish/Porter/Eigen)  
conformation in organic synthesis (Barton)  
connection between structure and function of proteins (Anfinsen)  
discovery of metallocenes (Wilkinson/O. Fischer)  
use of enzymes to catalyze simple organic reactions (Cornforth/Prelog)  
chemiosmotic theory (Mitchell)  
non-equilibrium thermodynamics (Prigogine)  
discovery of recombinant DNA (Berg)  
laser spectroscopy (Bloembergen/Schawlow)  
host-guest chemistry (Cram/Lehn/Pedersen)  
discovery of transfer-RNA (Altman/Cech)  
retrosynthetic analysis (Corey)  
scaling laws (de Gennes)  
electron microscopy (Ruska/Siegbahn)  
scanning tunnelling microscopy (Binnig/Rohrer)  
BSC theory of superconductivity (Bardeen/Cooper/Schrieffer)  
condensed matter physics (Landau)  
phase contrast microscopy (Zernike)  
development of the cyclotron (Lawrence)  
synthesis of new radioactive elements using slow neutrons (Fermi)  
electron diffraction by crystals (Davisson/G.P. Thomson)  
discovery of sedimentation equilibrium (Perrin)  
photoelectric effect (Einstein)  
liquification of helium (Kamerlingh-Onnes)  
infrared spectroscopy  
atomic force microscopy  
ultraviolet spectroscopy

## (5) Chemistry Journals

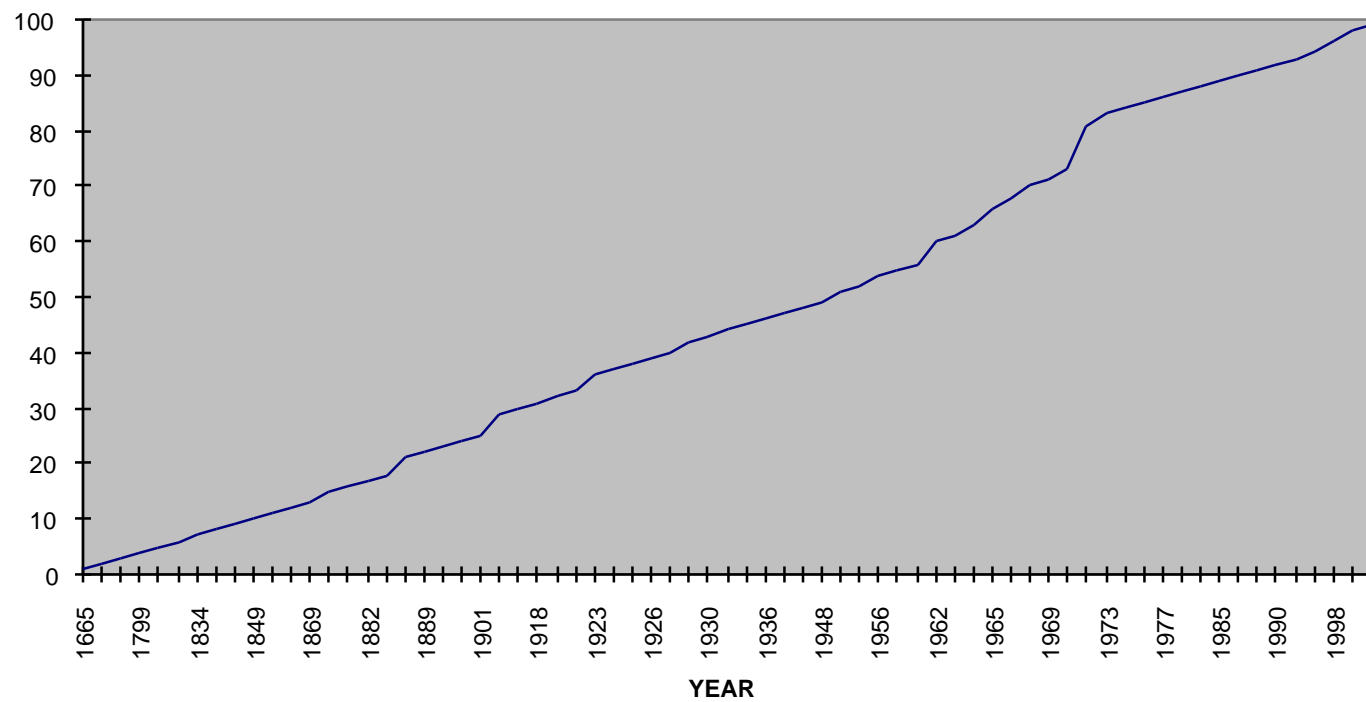
<b>FOUNDING YEAR</b>	<b>JOURNAL</b>
1665	Philosophical Transactions
1789	Annales de Chimie et de Physique
1797	Philosophical Magazine
1799	Annalen der Physik und Chemie
1800	Proceedings of the Royal Society of London
1832	Justus Liebig's Annalen Chemie
1834	Journal für Praktische Chemie
1835	Comptes Rendus Hebdomadaires des Seances de l'Academie des Sciences
1841	Gazzetta Chimica Italiana
1849	Journal of the Chemical Society
1858	Zeitschrift für Chemie
1868	Chemische Berichte
1869	Nature
1870	Monatshefte für Chemie
1870	Journal für Praktische Chemie Neue Folge
1879	Journal of the American Chemical Society
1882	Recueil du Travail de Chimie des Pays Bas
1883	Science
1887	Phil. Trans. Series A
1887	Phil. Trans. Series B
1887	Zeitschrift für Physikalische Chemie
1889	Bulletin de la Societe Chimie de France
1892	Zeitschrift für Anorganische Chemie und Allgemeine Chemie
1984	Zeitschrift für Elektrotechnik und Elektrochemie
1896	Journal of Physical Chemistry

1901           Physikalische Zeitschrift  
1905           Journal of Biological Chemistry  
1905           Proc. Roy. Soc. London Series A  
1905           Proc. Roy. Soc. London Series B  
1905           Transactions of the Faraday Society  
1906           Biochemical Journal  
1918           Helvetica Chimica Acta  
1920           Zeitschrift für Physik  
1922           Journal of Biochemistry  
1923           Canadian Journal of Chemistry  
1923           Chemical and Engineering News  
1923           Chemistry and Industry (formerly Chemical Industry Review)  
1924           Journal of Chemical Education  
1925           Chemical Reviews  
1926           Bulletin of the Chemical Society of Japan  
1927           Zhurnal Fizicheskoi Khimii (Russian Journal of Physical Chemistry,  
                  Journal of Physical Chemistry of the USSR)  
1928           Z. Physik. Chem. Series A  
1928           Z. Physik. Chem. Series B  
1930           Reviews of Scientific Instruments  
1931           Zhurnal Obshchei Khimii (Journal of General Chemistry of the USSR)  
1933           Journal of Chemical Physics  
1936           Journal of Organic Chemistry  
1946           Zeitschrift für Naturforschung B  
1947           Acta Chemica Scandinavica  
1948           Australian Journal of Chemistry  
1949           Chemistry in Canada (now Canadian Chemical News)  
1949           Journal of Organometallic Chemistry  
1952           Uspekhi Khimii (Russian Chemical Reviews)  
1956           Mendeleev Chemistry Journal  
1956           Zhurnal Neorganicheskoi Khimii (Journal of Inorganic Chemistry of the  
                  USSR)  
1957           Tetrahedron

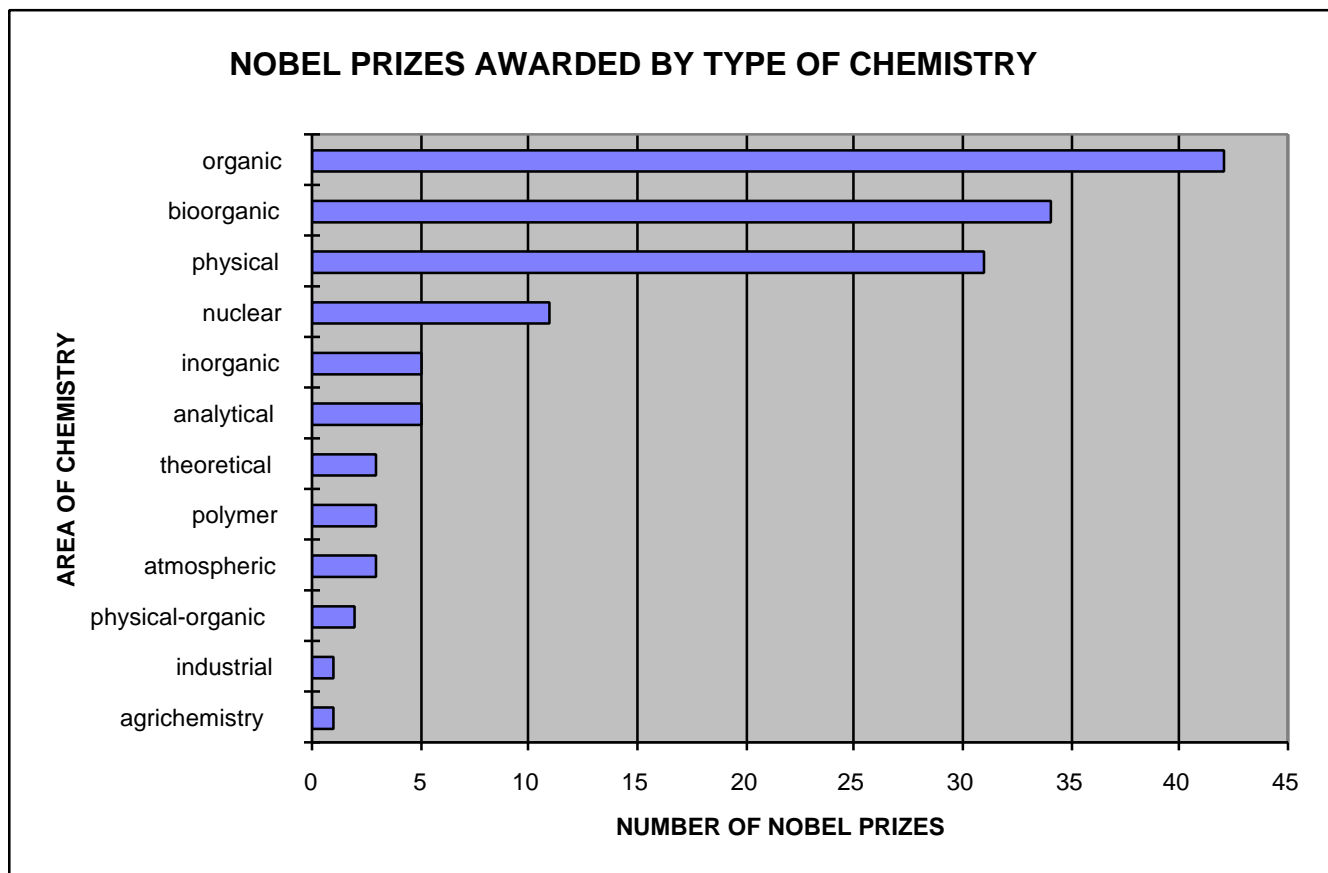
1960 Pure and Applied Chemistry  
1962 Biochemistry  
1962 Inorganic Chemistry  
1962 Photochemistry and Photobiology  
1962 Theoretica Chimica Acta (now Theoretical Chemical Accounts)  
1963 Israel Journal of Chemistry  
1964 Education in Chemistry  
1964 Journal of Heterocyclic Chemistry  
1965 Chemistry in Britain  
1965 Journal of the Chemical Society, Chemical Communications  
1965 Zhurnal Organicheskoi Khimii (Journal of Organic Chemistry of the USSR)  
1967 Chemical Physics Letters  
1967 Journal of Molecular Structure  
1968 Accounts of Chemical Research  
1968 Macromolecules  
1969 International Journal of Chemical Kinetics  
1971 Chemical Technology (now Chemical Innovation)  
1971 Synthetic Communications  
1972 Chemical Society Reviews  
1972 Chemistry Letters  
1972 Journal of Photochemistry and Photobiology (now Journal of Photochemistry and Photobiology A: Chemistry)  
1972 Journal of the Chemical Society, Dalton Transactions  
1972 Journal of the Chemical Society, Faraday Transactions I  
1972 Journal of the Chemical Society, Faraday Transactions II  
1972 Journal of the Chemical Society, Perkin Transactions I  
1972 Journal of the Chemical Society, Perkin Transactions II  
1973 Chemical Physics  
1973 Heterocycles  
1974 Synthesis  
1975 Tetrahedron Letters  
1977 New Journal of Chemistry  
1980 Journal of Computational Chemistry

1982	Organometallics
1985	Langmuir
1988	Journal of Physical Organic Chemistry
1989	Chemistry of Materials
1990	Tetrahedron Asymmetry
1992	Synlett
1995	Chemistry: European Journal
1997	Journal of Physical Chemistry A
1997	Journal of Physical Chemistry B
1998	European Journal of Inorganic Chemistry
1998	European Journal of Organic Chemistry
1999	Organic Letters

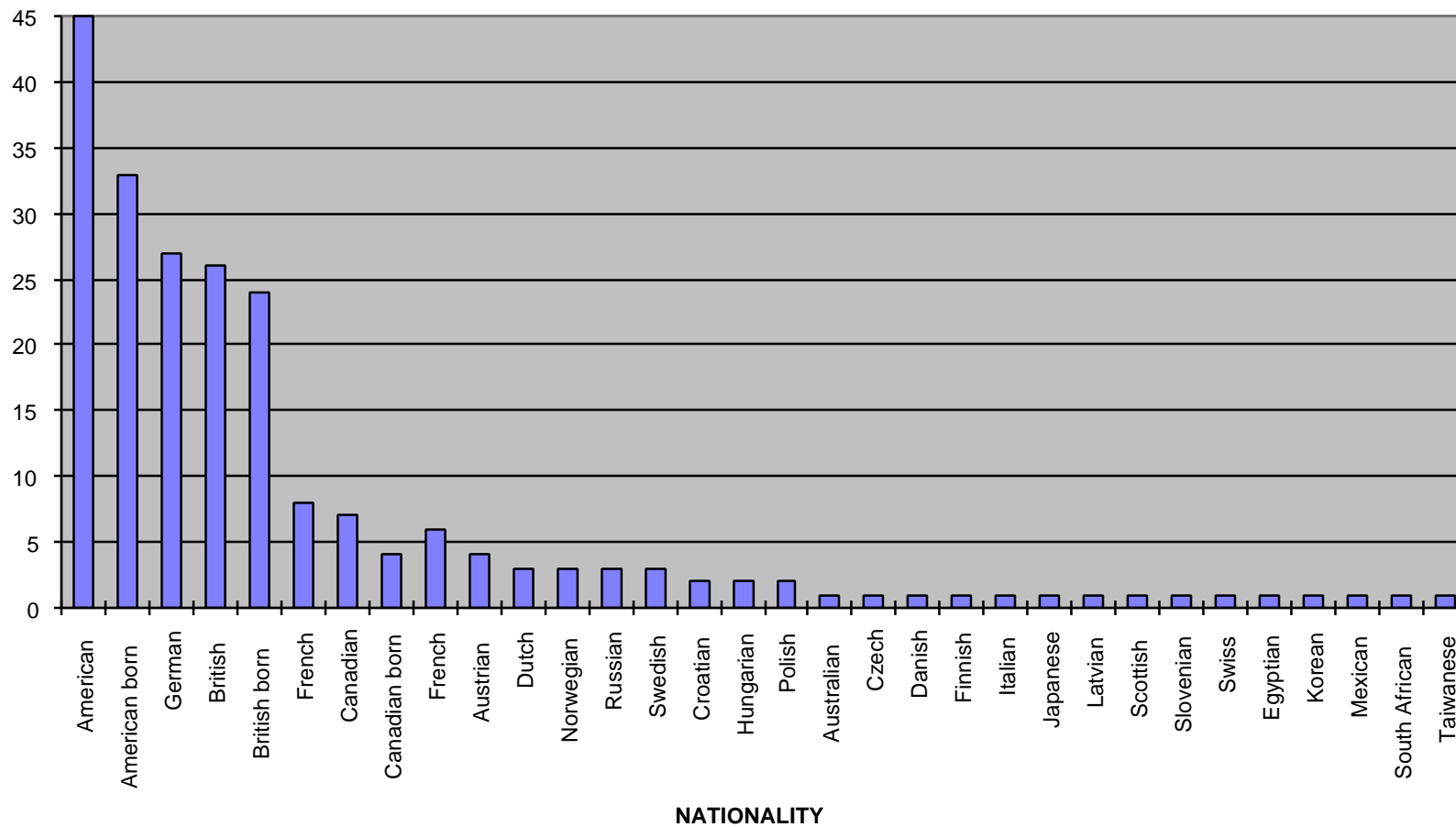
### CUMULATIVE NUMBER OF CHEMISTRY JOURNALS ESTABLISHED



## (6) Nobel Prizes



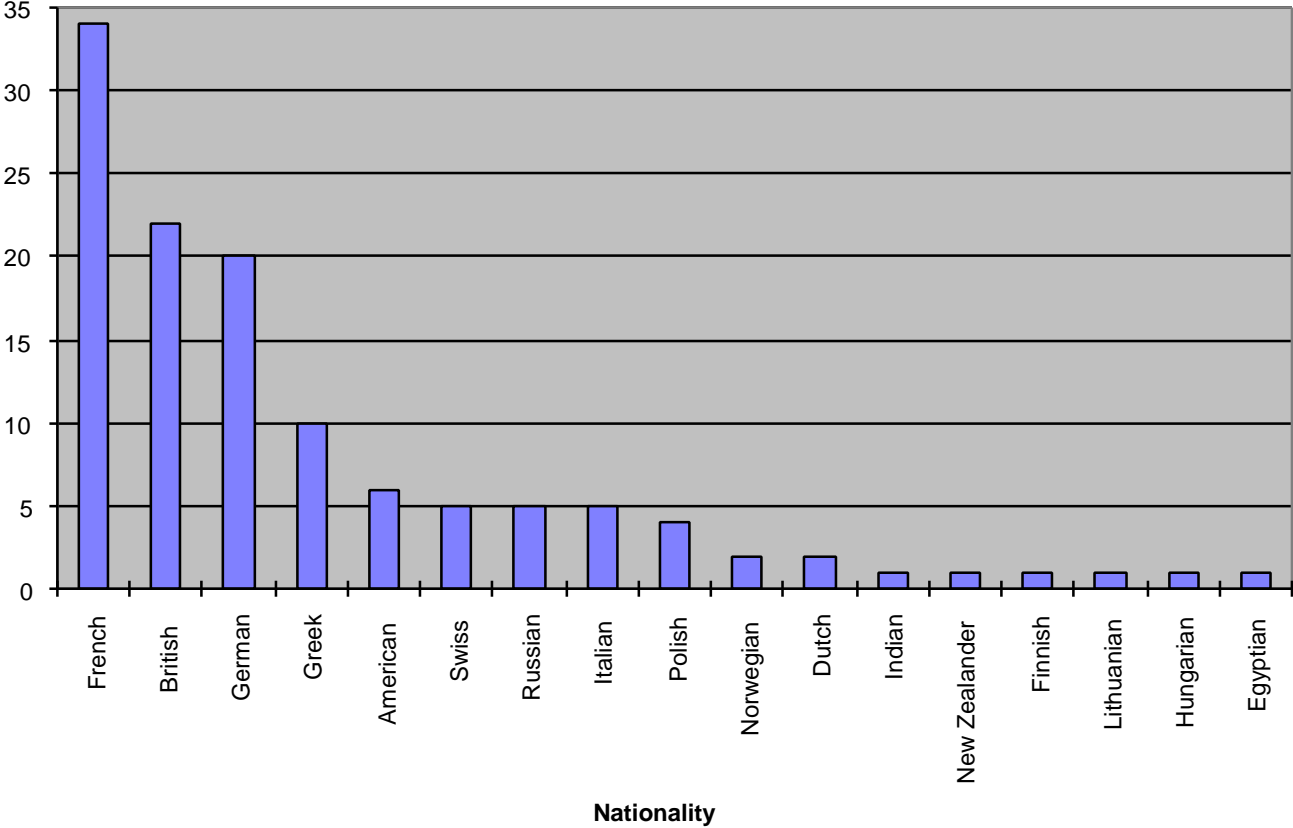
# CHEMISTRY NOBEL LAUREATES NATIONALITY DEMOGRAPHICS



## (7) Mathematicians

<b>Nationality</b>	<b>Number of Mathematicians</b>
French	34
British	22
German	20
Greek	10
American	6
Swiss	5
Russian	5
Italian	5
Polish	4
Norwegian	2
Dutch	2
Indian	1
New Zealander	1
Finnish	1
Lithuanian	1
Hungarian	1
Egyptian	1
<b>TOTAL</b>	<b>121</b>

### Mathematicians: Demographics



## List of Mathematical Terms Named After People:

Abelian group  
Abel's theorem on multiplication of series  
Abel's identities  
Abel's inequality  
Abel's integral equation  
Abel's test for convergence  
Abel's test for infinite integrals  
Airy's disk  
Airy equation  
Airy integral  
Alexander polynomial  
Theorems of Apollonius  
Apollonius' circle  
Archimedes' spiral  
Archimedes' principle  
Archimedes' axiom  
Archimedian screw  
Argand diagram  
Banach spaces  
Bayes theorem  
Bernoulli's theorem  
Bernoulli's differential equation  
Bernoulli distribution  
Bernoulli effect  
Bernoulli trials  
Bernoulli's lemniscate  
Bessel functions  
Bessel integral equation

Bessel inequality  
Binet formula  
Boolean algebra  
Borromean rings  
Brianchon theorem  
Briggs's logarithms  
Buffon needle problem  
Cantor set theory  
Cantor fractals  
Cardano's solution of cubics  
Cauchy integral theorem  
Cauchy integral formula  
Cauchy-Schwarz inequality  
Cauchy frequency distribution  
Cauchy mean value theorem  
Cauchy rule of series  
Cauchy tests for convergence  
Cauchy theorem of existence of a limit  
Cavalieri's theorem  
Cayley matrix theory  
Cayley-Hamilton theorem  
Chebyshev's inequality  
Chebyshev polynomials  
Chebyshev approximation  
Clifford theorem  
Clifford algebra  
Cramer's rule  
D'Alembert's ratio test  
D'Alembertian  
D'Alembert's paradox  
D'Alembert's test for convergence  
D'Alembert's principle  
Dedekind cuts

de Moivre's theorem  
de Morgan's law  
Desargues's theorem  
Descartes rule of signs  
cartesian co-ordinate system  
Descartes' laws  
Diophantine equations  
Dirichlet condition  
Dirichlet problem  
Dirichlet test for convergence  
sieve of Eratosthenes  
Euclidean geometry  
Euler's series  
Euler's formula  
Euler's constant  
Euler polyhedron formula  
Euler's definition of gamma function  
Euler integral  
Eulerian angles  
Euler's equations of motion  
Fermat's last theorem  
Fermat point  
Fermat principle of optics  
Fermat's spiral  
Fibonacci numbers  
Fibonacci sequence  
Fourier series  
Fourier coefficient  
Fourier transform  
Galois group theory  
Gaussian function  
Gauss' law  
Gaussian distribution

gauss unit of magnetic field strength  
Gauss-Jordan elimination  
Gauss-Seidel iteration  
Goldbach conjectures  
Gram-Schmidt orthogonalization  
Green's theorem  
Guldin's first and second rules  
Hamiltonian operator  
Hankel functions  
Heaviside transform  
Heaviside function  
Heron's formula  
Hermite polynomial  
Hermitian operator  
Hilbert space  
Hilbert problems  
Jacobian determinant  
Jacobian matrix  
Shannon-Jones function  
Jones knot polynomial  
Jordan curve  
Gauss-Jordan elimination  
Julia set  
Klein bottle  
Koch triangle  
Koch snowflake  
curves of Koch  
Kronecker delta  
Runge-Kutta method  
Lagrange multipliers  
Lagrange differential equation  
Lagrange equations of motion  
Lagrange identity

Lagrange interpolation formula  
Lagrange theorem  
Lagrange theorem of divisibility  
Lagrangian  
Lagrange theorem in group theory  
Laguerre polynomials  
Laplace's equation  
Laplace transform method  
Laplacian operator  
Lebesgue integral  
Legendre polynomial  
Leibniz formula  
Leontief matrix  
L'Hôpital's rule  
Lie algebra  
Liouville theorem  
Lorentzian function  
Lorentz transformation  
Lucas numbers  
Maclaurin series  
Mandelbrot set  
Markov chains, Markov processes  
Mathieu functions  
Mellin transforms  
Mersenne numbers  
Menelaus' theorem  
Minkowski inequality  
Möbius strip  
Napier logarithms  
Napierian base  
Napier's rules  
Theorems of Pappus  
Pascal's triangle

Pascal's theorem  
Pell number sequence  
Pell's equation  
Penrose tiles  
Peano axioms  
Peano curve  
Picard little theorem  
Picard big theorem  
Platonic solids  
Poincaré theorem  
Poisson distribution  
Poisson equation  
Poisson ratio  
Polya's theorem  
Ptolemy's theorem  
Pythagorean theorem  
Pythagorean triples  
Newton-Raphson Method  
Ramanujan sums  
Reimann hypothesis  
Reimann sums  
Reimann zeta function  
Reimann integral  
Reimann geometry  
Riemann surfaces  
Rolle's theorem  
Runge-Kutta method  
Russell's paradox  
Sarrus's rule  
Gram-Schmidt orthogonalization  
Cauchy-Schwarz inequality  
Gauss-Seidel iteration  
Shannon-Jones function

Sierpinski triangle  
Sierpinski sponge  
Sierpinski carpet  
Simpson's rule  
Stieltjes integral  
Sylvester's theorem  
Taylor series  
Taylor theorem  
Thales's theorem  
Turing theory  
Turing machine  
Vandermonde determinant  
Venn diagram  
Vieta's formula  
Vinogradov's theorem  
Volterra's integral equation  
Wallis formula  
Weierstrass approximation theorem  
Weierstrass test for convergence  
Weierstrass inequalities  
Weibull distribution  
Wiener integrals  
Wiles theorem  
Wronskian  
Zeno's paradox

