

NAMED EQUATIONS AND LAWS IN CHEMISTRY

(A – D)

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Svante August Arrhenius



19 February 1859 - 2 October 1927
Swedish, b. Wijk, near Uppsala, Sweden

Nobel Prize Chemistry 1903

Arrhenius equation, Arrhenius plot
Arrhenius, S., *Z. Physik. Chem.* **1889**, 4, 226

Biographical References:

Farber, Eduard (ed.), *Great Chemists*, Interscience Publishers: New York, 1961
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Dr. John Andraos, [http://www.careerchem.com/NAMED/Named-EQ\(A-D\).pdf](http://www.careerchem.com/NAMED/Named-EQ(A-D).pdf)

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Kauffman, G.B. *J. Chem. Educ.* **1988**, 65, 437

Editorial *Endeavour* **1959**, 18, 59

Lorenzo Romano Amedeo Carlo Avogadro, Conte de Quaregno e Cerreto



9 August 1776 - 9 July 1856

Italian, b. Turin, Italy

Avogadro Law or Principle

Avogadro, L.R.A.C., *J. Physique* **1811**, 73, 58

Biographical References:

Porter, Roy (ed.), *The Biographical Dictionary of Scientists*, 2nd ed., Oxford University Press: New York, 1994

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Partington, J.R., *A History of Chemistry*, Vol. IV, Macmillan and Co., Ltd.: London, 1964, p. 213

August Beer

31 July 1825 - 18 November 1863

German, b. Trier, Germany

Beer-Lambert-Bouguer Law

Beer, A., *Ann. Physik* **1852**, 86, 78

Bouguer, P., *Essai d'optique sur la generation de la lumiere*, Paris, 1729

Lambert, J.H., *Photometria*, 1760

Biographical References:

Pfeiffer, H.G.; Liebafsky, H.A., *J. Chem. Educ.* **1951**, 28, 123

Debus, Allen G. (ed.) *World Who's Who in Science*, 1st ed., Marquis-Who's Who, Inc.:

Hannibal: Missouri, 1968

Ronald Percy Bell

24 November 1907 - 9 January 1996

British, b. Maidenhead, Berkshire, England

Bell equation

Bell, R.P., *Proc. Roy. Soc. London Ser. A.*, **1933**, 139, 466

Biographical references:

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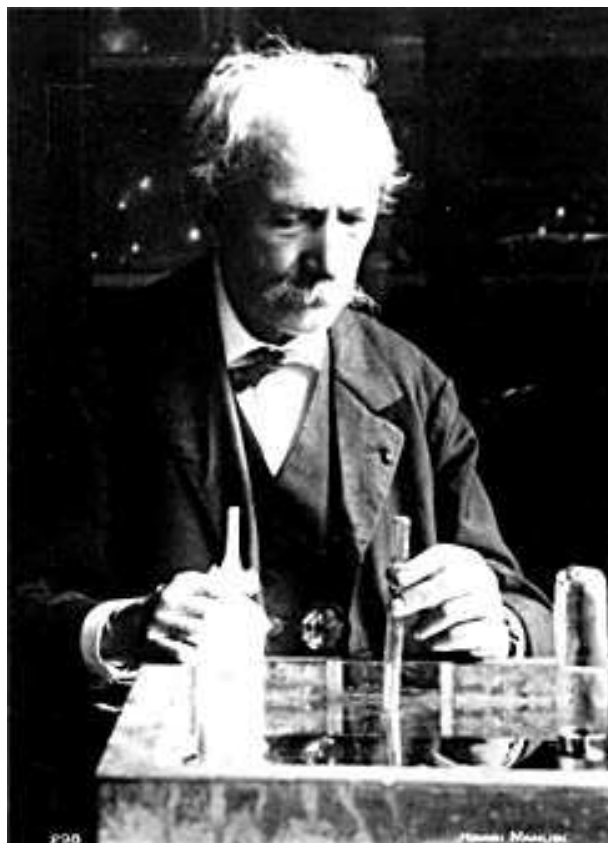
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Cox, B.G.; Jones, J.H. *Biog. Memoirs Fellows Roy. Soc.* **2001**, 47, 19

Pierre Eugène Etienne Marcelin Berthelot



25 October 1827 - 18 March 1907
French, b. Paris, France

Berthelot's equation

Berthelot, M., *Ann. Chim. Phys.* **1875**, 4, 5

Biographical References:

Sabatier, P., *J. Chem. Educ.* **1926**, 3, 1099

Farber, Eduard (ed.), *Great Chemists*, Interscience Publishers: New York, 1961

Bredig, G., *Angew. Chem.* **1907**, 20, 689

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Jacob Bigeleisen

2 May 1919 – 7 August 2010

American, b. Paterson, New Jersey, USA

Bigeleisen-Goeppert-Mayer heavy atom approximation

Bigeleisen, J.; Goeppert-Mayer, M., *J. Chem. Phys.* **1947**, 15, 261

Bigeleisen, J., *J. Chem. Phys.* **1949**, 17, 675

Bigeleisen-Wolfsberg equation

Bigeleisen, J.; Goeppert-Mayer, M., *J. Chem. Phys.* **1947**, 15, 261

Melander, L., *Arkiv. Kemi* **1950**, 2, 211

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Ainsworth, S.J. *Chem. Eng. News* 2010, 88(41), 48

Niels Janniksen Bjerrum

11 March 1879 – 30 September 1958

Danish, b. Copenhagen, Denmark

Brönsted-Bjerrum equation

Brönsted, J.N., *Z. Phys. Chem.* **1922**, 102, 169

Brönsted, J.N., *Z. Phys. Chem.* **1925**, 115, 337

Bjerrum, N., *Z. Phys. Chem.* **1924**, 108, 82

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Oesper, E., *J. Chem. Educ.* **1951**, 28, 433

Guggenheim, E.A., *Proc. Chem. Soc.* **1960**, 104

Guggenheim, E.A., *Trans. Faraday Soc.* **1959**, 55, 1

Pogg. **1967**, 7B(1), 406

Sir Charles Blagden

17 April 1748 - 26 March 1820

British, b. Wooten-under-Edge, Gloucestershire, England

Blagden's law (freezing point depression)

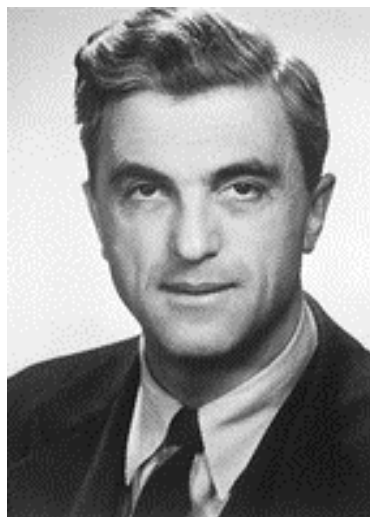
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Scott, E.L. in Gillispie, Charles Coulston (ed.), *Dictionary of Scientific Biography*, Charles Scribner & Sons: New York, 1980, Vol. 2, 186

Felix Bloch



23 October 1905 - 10 September 1983
Swiss-American, b. Zurich, Switzerland

Nobel Prize Physics 1952

Bloch equations

Bloch, F., *Phys. Rev.* **1956**, 102, 104

Bloch, F., *Phys. Rev.* **1946**, 70, 460

Bloch $T^{3/2}$ law for magnetization

Biographical References:

Hofstadter, R., *Biog. Memoirs Natl. Acad. Sci.* **1994**, 64, 35

Daintith, J.; Mitchell, S.; Tootill, E.; Gjersten, D., *Biographical Encyclopedia of Scientists*, Institute of Physics Publishing: Bristol, UK, 1994

Pierre Bouguer

16 February 1698 - 15 August 1758

French, b. Croisic, Brittany, France

Beer-Lambert-Bouguer law

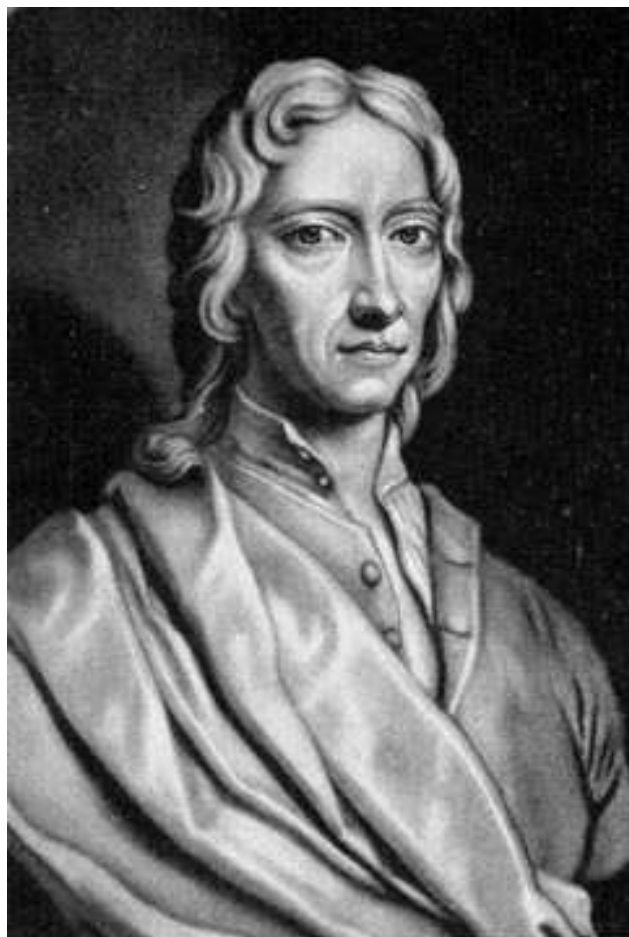
see August Beer

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Daintith, J.; Mitchell, S.; Tootill, E.; Gjersten, D., *Biographical Encyclopedia of Scientists*, Institute of Physics Publishing: Bristol, UK, 1994

Middleton, W.E.K. in Gillispie, Charles Coulston (ed.), *Dictionary of Scientific Biography*, Charles Scribner & Sons: New York, 1981, Vol. 2, 343

The Honourable Robert Boyle



25 January 1627 - 30 December 1691
Irish, b. Lismore Castle, Munster, Ireland

Boyle's law (Mariotte's law)

Boyle, R., *A Defense of the Doctrine Touching the Spring and Weight of the Air*, 2nd ed., 1662

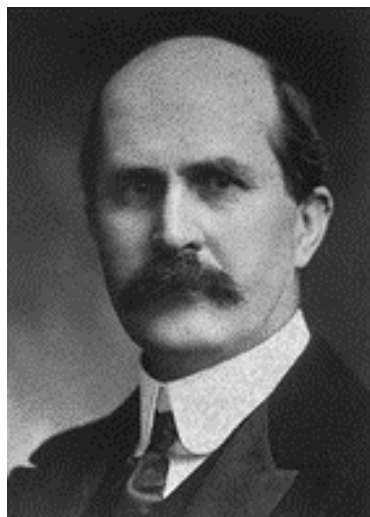
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Sir William Henry Bragg



2 July 1862 - 12 March 1942

British, b. Westward, Cumberland, England

Nobel Prize Physics 1915

Biographical References:

Andrade, E.N. da C., *Biog. Memoirs Fellows Roy. Soc.* **1943**, 4, 277

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Scientists*, W. & R. Chambers: Edinburgh, 1989

Andrade, E.N. da C., *Roy. Soc. Obit. Not.* **1942 - 1944**, 4, 277

Sir William Lawrence Bragg



31 March 1890 - 1 July 1971

British, b. Lefevre Terrace, North Adelaide, Adelaide, Australia

Nobel Prize Physics 1915

Bragg equation, Bragg angle of diffraction, Bragg planes, Bragg reflection indices

Bragg, W.L., *Proc. Cambridge Phil. Soc.* **1912**, 17, 43

Biographical References:

Phillips, Sir D., *Biog. Memoirs Fellows Roy. Soc.* **1979**, 25, 75

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Thomas, J.M. *Angew. Chem. Int. Ed.* **2012**, 51, 12946

George Edward Briggs

25 June 1893 - 7 February 1985

British, b. Grimsby, England

Briggs-Haldane solution

Briggs, G.E.; Haldane, J.B.S., *Biochem. J.* **1925**, 19, 338

Biographical references:

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Robertson, Sir R., *Biog. Memoirs Fellows Roy. Soc.* **1986**, 32, 35

Prince Louis Victor Pierre Raymond, 7th Duc de Broglie



15 August 1892 - 19 March 1987

French, b. Dieppe, France

de Broglie's law, de Broglie wavelength

de Broglie, L., *Ann. Physik* **1925**, 3, 22

de Broglie, L., *Nature* **1923**, 112, 540

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Johannes Nicolaus Brönsted



22 February 1879 - 17 December 1947

Danish, b. Varde, Jutland, Denmark

Brönsted catalysis law, Brönsted plot

Brönsted, J.N.; Guggenheim, E.A., *J. Am. Chem. Soc.* **1927**, 49, 2554

Brönsted, J.N.; Pedersen, K., *Z. Phys. Chem.* **1924**, 108, 185

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Brönsted-Bjerrum equation

see Niels Janniksen Bjerrum

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Partington, J.R., *A History of Chemistry*, Vol. IV, Macmillan and Co., Ltd.:

London, 1964, p. 682

Joseph Frederick Bunnett



26 November 1921 – 23 May 2015

American, b. Portland, Oregon, USA

Bunnett-Olsen equations

Bunnett, J.F.; Olsen, F.P., *Can. J. Chem.* **1966**, 44, 1899

Bunnett, J.F.; Olsen, F.P., *Can. J. Chem.* **1966**, 44, 1917

Biographical References:

Bunnett, J.F., *Acc. Chem. Res.* **1972**, 5, 139

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Chem. Eng. News **2016**, 94(29), 36

Dean Burk

21 March 1904 - 6 October 1988

American, b. Oakland, California, USA

Lineweaver-Burk plot

Lineweaver, H.; Burk, D., *J. Am. Chem. Soc.* **1934**, 56, 658

Lineweaver, H.; Burk, D.; Deming, W.E. *J. Am. Chem. Soc.* **1934**, 56, 225

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Hannibal: Missouri, 1968

Pogg. 8(1), 646

Chem. Eng. News **1989**, 67, 2

John Alfred Valentine Butler

14 February 1899 – 16 July 1977

British, b. Winchcombe, Gloucestershire, England

Gross-Butler equation

Gross, P.; Wischin, A., *Trans. Faraday Soc.* **1936**, 32, 879

Gross, P.; Steiner, H.; Suess, H., *Trans. Faraday Soc.* **1936**, 32, 883

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Jacques Alexandre César Charles



12 November 1746 - 7 April 1823

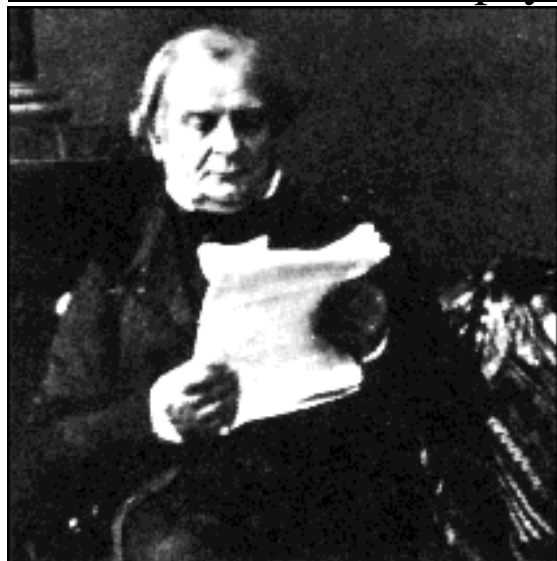
French, b. Beaugency, Loiret, France

Charles' law (Gay-Lussac's law)

Biographical References:

Daintith, J.; Mitchell, S.; Tootill, E.; Gjersten, D., *Biographical Encyclopedia of Scientists*, Institute of Physics Publishing: Bristol, UK, 1994

Bénoit Paul Emile Clapeyron



26 February 1799 - 28 January 1864
French, b. Paris, France

Clapeyron equation of state

Clapeyron, E., *J. Ecole Polytech. (Paris)* **1834**, 14, 153

Clausius-Clapeyron equation

Biographical References:

Daintith, J.; Mitchell, S.; Tootill, E.; Gjersten, D., *Biographical Encyclopedia of Scientists*, Institute of Physics Publishing: Bristol, UK, 1994

Rudolf Julius Emmanuel Clausius



2 January 1822 - 24 August 1888
German, b. Kösslin, Germany

Clausius-Clapeyron equation

Clausius equation

Clausius statement of second law of thermodynamics

Clausius, R., *Ann. Physik Chem.* **1850**, 79, 368

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Biographical References:

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Edward Uhler Condon

2 March 1902 - 26 March 1974

American, b. Alamogordo, New Mexico, USA

Gamow-Condon-Gurney law

Gamow, G. Z. *Physik* **1928**, 51, 204

Condon, E.U.; Gurney, R.W. *Phys. Rev.* **1929**, 33, 127

Biographical references:

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Athelstan John Cornish-Bowden

1943 -

British, b. ?

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Eisenthal, R.; Cornish-Bowden, A., *Biochem. J.* **1974**, 139, 715

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<http://www.library.yale.edu/pubstation/databases/biogen.html>

Robin Cox

1943 -

British-Canadian, b. England

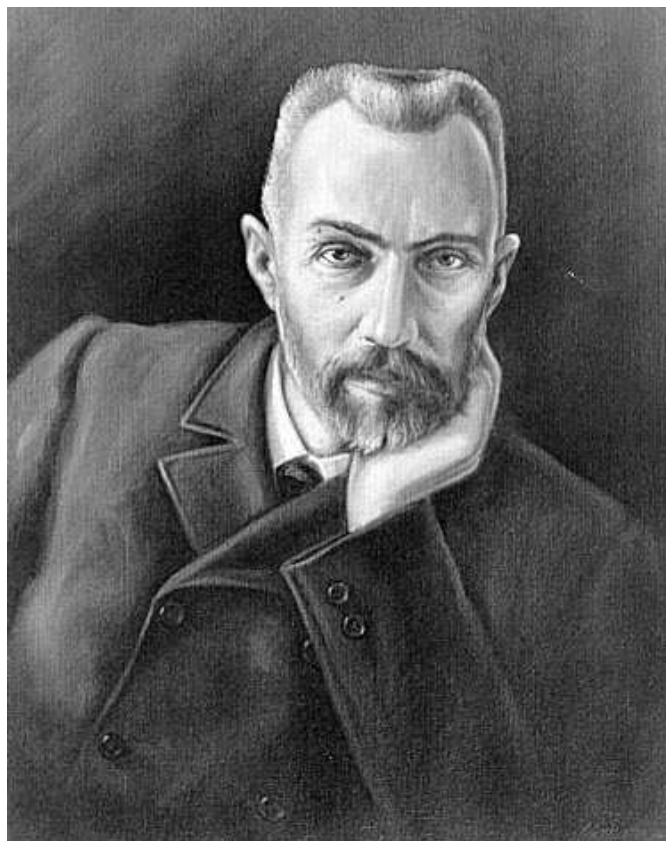
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Cox, R.A.; Yates, K., *J. Am. Chem. Soc.* **1978**, 100, 3861

Cox, R.A.; Yates, K., *Can. J. Chem.* **1981**, 59, 2116

Biographical References:

Pierre Curie



15 May 1859 - 19 April 1906
French, b. Paris, France

Nobel Prize Physics 1903

Curie-Weiss law, Curie temperature, Curie point

Curie, P.; Curie, J., *Compt. Rend.* **1880**, 91, 294

Curie, P. *Ann. Chim. Phys.* **1895**, 5[7], 289

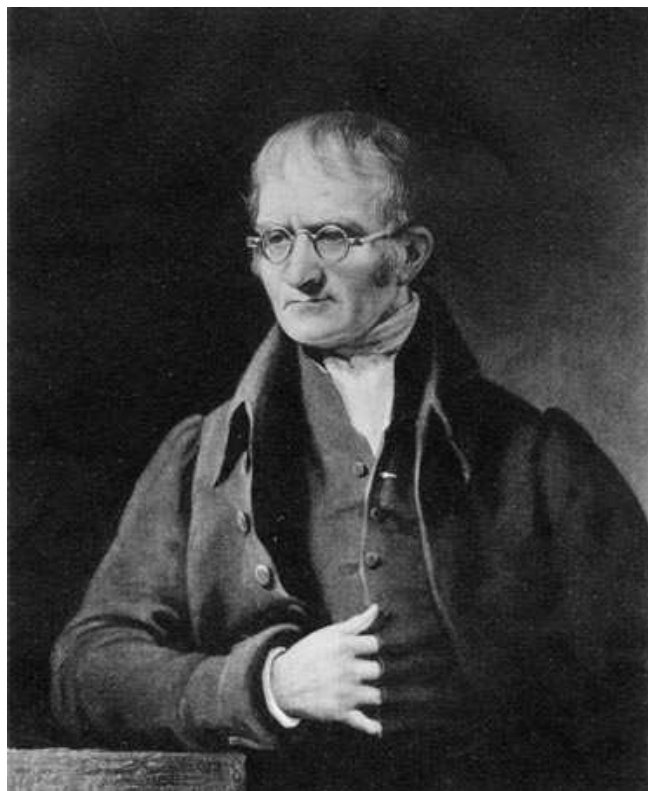
see Pierre Ernest Weiss

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Wyart, J. in Gillispie, Charles Coulston (ed.), *Dictionary of Scientific Biography*, Charles Scribner & Sons: New York, 1981, Vol. 3, 503

John Dalton



6 September 1766 - 27 July 1844

British, b. Eaglesfield, near Cockermouth, Cumberland, England

Dalton's law of partial pressures

Dalton, J., *Mem. Liter. Phil. Soc. Manchester* **1802**, 5, 535

Dalton, J., *Mem. Liter. Phil. Soc. Manchester* **1805**, 1, 244

Dalton's law of evaporation

Dalton's law of solubility of gases

Dalton, J., *Mem. Liter. Phil. Soc. Manchester* **1805**, 1, 271

Dalton's temperature scale

Dalton unit of molecular weight

Dalton's atomic theory

Dalton, J., *A New System of Chemical Philosophy*, R. Bickerstaff: London, 1808 - 1827.

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Thackray, A. in Gillispie, Charles Coulston (ed.), *Dictionary of Scientific Biography*, Charles Scribner & Sons: New York, 1973, Vol. 3, 573

Peter Joseph Wilhelm Debye



24 March 1844 - 2 November 1966

Dutch-American, b. Maastricht, Netherlands

Nobel Prize Chemistry 1936

Debye-Hückel law

Debye, P.; Huckel, E., *Physik. Z.* **1923**, 24, 185; 334

Debye, P.; Huckel, E., *Physik. Z.* **1924**, 25, 97

Debye equation for polarization

Debye T^3 law, Debye-Einstein law, Debye temperature

Debye, P., *Ann. Physik* **1912**, 39, 789

Debye unit of electric dipole moment

Debye length

Biographical References:

Davies, M., *Biog. Memoirs Fellows Roy. Soc.* **1970**, 16, 175

Williams, J.W., *Biog. Memoirs Natl. Acad. Sci.* **1975**, 46, 23

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Wirtz, K., *Angew. Chem.* **1960**, 72, 1

Abbott, David (ed.), *The Biographical Dictionary of Scientists: Chemists*, Peter Bedrick Books: New York, 1983

John William Draper



A handwritten signature of John William Draper, written in cursive and enclosed in an oval.

5 May 1811 - 4 January 1882

British-American, b. St. Helens, Lancashire, England

Grotthuss-Draper law

Draper, J.W., *Phil. Mag.* **1841**, 19, 195

Draper, J.W., *Phil. Mag.* **1845**, 26, 465

Draper, J.W., *Phil. Mag.* **1851**, 1, 368

Grotthuss, C., *Ann. Phys.* **1819**, 61, 50

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Partington, J.R., *A History of Chemistry*, Vol. IV, Macmillan and Co., Ltd.: London, 1964, p. 716

Biog. Memoirs Natl. Acad. Sci. **1878**, 2, 349

Pierre Maurice Marie Duhem



10 June 1861 - 14 September 1916

French, b. Paris, France

Gibbs-Duhem equation

Gibbs, J.W., *Trans. Conn. Acad.* **1876 - 1878**, 3, 108; 342

Duhem, P., *Le Potentiel Thermodynamique et ses Applications*, 1886

Duhem, P., *Z. Physik. Chem.* **1888**, 2, 568

Biographical References:

Maurer, James F. (ed.) *Concise Dictionary of Scientific Biography*,
Charles Scribner's Sons: New York, 1981

Partington, J.R., *A History of Chemistry*, Vol. IV, Macmillan and Co., Ltd.:
London, 1964, p. 616

Pierre Louis Dulong



12 February 1785 - 18 July 1838
French, b. Rouen, France

Dulong-Petit law

Dulong, P.L.; Petit, A.T., *Ann. Chim.* **1819**, 10, 395

Biographical References:

Abbott, David (ed.), *The Biographical Dictionary of Scientists: Chemists*, Peter Bedrick Books: New York, 1983
Partington, J.R., *A History of Chemistry*, Vol. IV, Macmillan and Co., Ltd.: London, 1964, p. 199