

Appendix II: Langmuir's papers

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Appendix II

Langmuir's Papers on Thermionic Emission, Gas Discharges and Plasmas contained in Volumes 3 (selected), 4, and 5 of his Collected Works published by Pergamon Press in 12 volumes in 1961 but here arranged in year order

The effect of space charge and residual gases on thermionic currents in high vacuum *Phys. Rev.* **II**, 450 (1913)

Fundamental phenomena in electron tubes having tungsten cathodes *Gen. Elec. Rev.* **XXIII**, 503, and 589 (1920)

The effect of space charge and initial velocities on the potential distribution and thermionic current between plane parallel electrodes *Phys. Rev.* **XXI**, 419 (1923)

The removal of thorium from the surface of a thoriated tungsten filament by positive ion bombardment (with K H Kingdon) *Phys. Rev.* **XXII**, 148 (1923)

The electron emission from thoriated tungsten filaments *Phys. Rev.* **XXII**, 357 (1923)

Currents limited by space charge between coaxial cylinders (with K B Blodgett) *Phys. Rev.* **XXII**, 347 (1923)

Electron emission from caesium-covered filaments (with K H Kingdon) *Phys. Rev.* **XXIII**, 112 (1923)

Thermionic effects caused by alkali vapors in vacuum tubes (with K H Kingdon) *Science* **LVII**, 58 (1923)

Positive ion currents from the positive column of mercury arcs *Science* **LVIII**, 290 (1923)

A new photo-electric effect: reflections of electrons induced by light *Science* **LVIII**, 398 (1923)

Positive ion currents in the positive column of the mercury arc *Gen. Elec. Rev.* **XXVI**, 731 (1923)

The pressure effect and other phenomena in gaseous discharges *J. Franklin Inst.* **CXCVI**, 751 (1923)

Currents limited by space charge between concentric spheres (with K B Blodgett) *Phys. Rev.* **XXIII**, 49 (1924)

A simple method for quantitative studies of ionization phenomena in gases (with H A Jones) *Science* **LIX**, 380 (1924)

A new type of electric discharge: the streamer discharge (with C G Found and A F Dittmer) *Science* **LX**, 392 (1924)

Studies of electric discharges in gases at low pressures (with H Mott-Smith) *Gen. Elec. Rev.* **XXVII**, 449, 538, 616 and 762 (1924)

Thermionic effects caused by vapours of alkali metals (with K H Kingdon) *Proc. Roy. Soc. A* **CVII**, 61 (1925)

Scattering of electrons in ionized gases *Phys. Rev.* **XXVI**, 585 (1925)

Flow of ions through a small orifice in a charged plate (with L Tonks and H Mott-Smith) *Phys. Rev.* **XXVIII**, 104 (1926)

The theory of collectors in gaseous discharges (with H Mott-Smith) *Phys. Rev.* **XXVIII**, 727 (1926)
Electrical discharges in gases at low pressures *Proc. Int. Congress, Como 1927* also *Zeit. f. Physik* **46**, 271 (1927)

Collisions between electrons and gas molecules (with H A Jones) *Phys. Rev.* **XXXI**, 357 (1928)

Oscillations in ionized gases *Proc. Nat. Acad. Sciences* **XIV**, 627 (1928)

- Oscillations in an ionized gas (with L Tonks) *Science* **68**, 598 (1928)
- Oscillations in ionized gases (with L Tonks) *Phys. Rev.* **XXXIII**, 195 (1929)
- The interaction of electron and positive ion space charges in cathode sheaths *Phys. Rev.* **XXXIII**, 954 (1929)
- General theory of the plasma of an arc (with L Tonks) *Phys. Rev.* **XXXIV**, 876 (1929)
- Control of an arc discharge by means of a grid (with A W Hull) *Proc. Nat. Acad. Sciences* **LI**, 218 (1929)
- Electrical discharges in gases – I – Survey of fundamental processes (with K T Compton) *Rev. Mod. Phys.* **II**, 123 (1930)
- Metastable atoms and electrons produced by resonance radiation in neon (with C G Found) *Phys. Rev.* **XXXVI**, 604 (1930)
- Diffusion of electrons back to an emitting electrode in a gas *Phys. Rev.* **XXXVIII**, 1656 (1931)
- Oxygen films on tungsten – I - A study of stability by means of electron emission in the presence of caesium vapour (with D S Villers) *J. Amer. Chem. Soc.* **LIII**, 486 (1931)
- The alleged production of adsorbed films on tungsten by active nitrogen *Phys. Rev.* **XXXVII**, 1006 (1931)
- Electrical discharges in gases at low pressures – II – Fundamental phenomena in electrical discharges (with K T Compton) *Rev. Mod. Phys.* **III**, 191 (1931)
- Caesium films on tungsten *J. Amer. Chem. Soc.* **LIV**, 1252 (1932)
- The mobility of caesium atoms adsorbed on tungsten *Phys. Rev.* **XL**, 463 (1932)
- Electrical discharges in gases at low pressures *J. Franklin Inst.* **CCXIV**, 275 (1932)
- Study of a neon discharge by use of collectors (with C G Found) *Phys. Rev.* **XXXIX**, 237 (1932)
- The nature of adsorbed films of caesium on tungsten Part I – The space charge sheath and the image force *Phys. Rev.* **XLIII**, 224 (1933)
- The evaporation of atoms, ions, and electrons from caesium films on tungsten (with J B Taylor) *Phys. Rev.* **XLIV**, 423 (1933)
- Thoriated tungsten filaments *J. Franklin Inst.* **CCXVII**, 543 (1934)
- Electrical discharges in vacuum and in gases at low pressures *Gen. Elec. Rev.* **XXXVIII** nos 10 and 11 (1935)
- Vapour pressure of caesium by the positive ion method (with J B Taylor) *Phys. Rev.* **LI**, 753 (1937)

Comment – It is clear that Langmuir when publishing his and his colleagues' work, had in mind a hierarchy of journals, leaving aside the *General Electric Review* – his own 'house journal', where it was possible to publish at length. Things of immediate interest went to *Science*, to be followed up by more extensive work which went to *Physical Review*. More scholarly contributions went to the *Journal of the Franklin Institute* – the American equivalent of the *Proceedings of the Royal Society A*, and in one case he chose to publish there.

Raoul Franklin, 10 September 2008