



Division of the History of Chemistry
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Citation for Chemical Breakthroughs



The fundamental paper on the formation of ionic compounds, with
a stable shell of two inner electrons and eight outer electrons

G. N. Lewis *J. Am. Chem. Soc.* 1916, 38, 762-785

[CONTRIBUTION FROM THE CHEMICAL LABORATORY OF THE UNIVERSITY OF CALIFORNIA.]

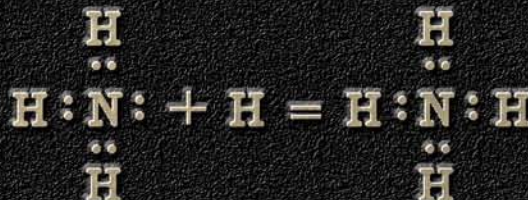
THE ATOM AND THE MOLECULE.

By GILBERT N. LEWIS.

Received January 26, 1916.

In order to express this idea of chemical union in symbols I would suggest the use of a colon, or two dots arranged in some other manner, to represent the two electrons which act as the connecting links between the two atoms. Thus we may write Cl_2 as $\text{Cl}:\text{Cl}$.

We may go further and give a complete formula for each compound by using the symbol of the kernel instead of the ordinary atomic symbol and by adjoining to each symbol a number of dots corresponding to the number of electrons in the atomic shell. Thus we may write $\text{H}:\text{H}$, $\text{H}:\ddot{\text{O}}:\text{H}$, $\text{H}:\ddot{\text{I}}:$, $:\ddot{\text{I}}:\ddot{\text{I}}:$, but we shall see that in many cases such a formula represents only one of the numerous extreme tautomeric forms. For the sake of simplicity we may also use occasionally formulae which show only those electrons concerned in the union of two atoms, as in the preceding paragraphs.



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