Fundamentals of Stoichiometry & Dimensional Analysis

A Research Paper By

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(A Guide to the Mathematical Understandings in Chemistry as Well as Using Dimensional Analysis to Solve Problems.)

What is Stoichiometry?

Stoichiometry is one of the most major branches in chemistry that deals with the relative qualities and quantities of reactants and products in chemical reactions. Stoichiometry is based on the "Law of Conservation of Mass". Stoichiometry is broke into the subjects of: Reaction Stoichiometry and Composition Stoichiometry. Reaction Stoichiometry describe relationships of substances during a chemical reaction. Composition Stoichiometry describes the quantitative mass among elements and its relationship with compounds. Next their is Gas Stoichiometry which is part of Reaction Stoichiometry. Gas Stoichiometry involves chemicals and compounds in its relationship that involves gases, such as steam or burning magnesium. The term Stoichiometry itself derives from the greek word, "*stoicheion metron",* which means element measure or measurement of an element. Stoichiometry relies on scientific laws in chemistry to understand things better. The main use of Stoichiometry is to balance equations in chemical reactants.

2H2 + O2->2H2O
Hydrogen+Oxygen form a liquid creating an exothermic reaction this is an example of reaction Stoichiometry

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$$m_{\mathrm{Al}} = \left(\frac{85.0\ \mathrm{g\ Fe_2O_3}}{1}\right)\left(\frac{1\ \mathrm{mol\ Fe_2O_3}}{159.7\ \mathrm{g\ Fe_2O_3}}\right)\left(\frac{2\ \mathrm{mol\ Al}}{1\ \mathrm{mol\ Fe_2O_3}}\right)\left(\frac{27.0\ \mathrm{g\ Al}}{1\ \mathrm{mol\ Al}}\right) = 28.7\ \mathrm{g}$$

The top equation is an example of balancing of equations to get the mathematical result of measurement.

This is an example of Mathematical Representations of Dimensional Analysis:
6r/6t + 6(r * u)/6x + 6(r * v)/6y + 6(r * w)/6z] + [1-28+(28+4)-4]= 1; 1+·mc²= ·mc²+ [6r/6t + 6(r * u)/6x + 6(r * v)/6y + 6(r * w)/6z] + [1-28+(28+4)-4]= 1; 1+[6r/6t + 6(r * u)/6x + 6(r * v)/6y + 6(r *w)/6z] + [1-28+(28+4)-4]+ ·mc²= ·mc²; ·mc²= ·mc²-[6r/6t + 6(r * u)/6x + 6(r * v)/6y + 6(r * w)/6z]= ·mc²: ·mc²- ·mc²=0: 0+18-2+7=23:23(log(100)= 47 ; cos(90 + 47 radians) = 0.334165383; 0.334165383 + (22 / 7) = 3.47702253; 3.47702253 - (3 / 1459) = 3.47496633; 3.47496633 - 3.4 + (8 / 2) - 6 + 4 = 2.07496633; 2.07496633 + cos(30 + log(1000 - 2 + 8 - 4 + 83 - 5 + 43 - (2 / 8)) radians) = 2.01144892; 2.01144892 + 2 - 2 - 2 + 800 - 2.8014 - .2 = 797.010049, log(797.010049) = 2.9014638; 2.9014638 + 8 - .900146380013174 + 2 - 6 + cos(90 radians) = 5.5532438; 5.5532438 + 9.2 = 14.7532438:14.7532438+P=14.7532438+P; 14.7532438+P- 14.7532438+P+P=NP, so if NP=P, n must equal 1 according to logic, mathematics, and computer language, 1+8=9, 9+(22/7)-3.14= 9.00285714, 9.00285714-9.00285714= [6r/6t + 6(r * u)/6x + 6(r * v)/6y + 6(r *w)/6z]; [6r/6t + 6(r * u)/6x + 6(r * v)/6y + 6(r * w)/6z]= 0, 0/0+2-18= -16; cos(-16 radians) = -0.95765948; (-0.95765948) + 8 - 2 + 17 = 22.0423405, 22.0423405+N= 23.0423405, remember since P=NP, N=1: 23.0423405 - 2 + 6 - 6 - .0423405 = 21; 21 * log(10 000) = 84; 84 - 2+ 6 - 8 - 2 + 6 + 4 - 2 + 67 + 8 - 4 + 2 - 67 + 8 - 2 + 4 - 8 = 94; so 84 - 2 + 6 - 8 - 2 + 6 + 4 - 2 + 67 + 8 - 4 + 2 - 67 + 8 - 2 + 4 - 8 - 10 = 84; 84 / 3 = 28; 28/4=7; 7(56)= 392, 392+4-80= 316; 316 / 3 = 105.333333, log(105.333333) = 2.02256583, 2.02256583+-2.02256583= [6r/6t + 6(r * u)/6x + 6(r * v)/6y + 6(r * w)/6z], which equals 0, 0= 8 - 8 + 8 - 8 + 8 - 8 + 8 - 8 + 8 - 8 + 8 - 8 - 8 + 8, so 8 - 8 + 8 -8 + 8 - 8 + 8 - 8 + 8 - 8 + 8 - 8 - 8 + 8 = [6r/6t + 6(r * u)/6x + 6(r * v)/6y + 6(r * w)/6z], (0 - 8 + 8 - 0 + (2 / 6) + (8 * 2) - 5 + (4 /3) - 12) - (2 / 3) + 1 = 1, (1+·mc²)/1= 1, 1 + 8 - 2 + 6 - 4 + log(100- cos(30 radians) - .9993296) = 10.9949609, 10.9949609 + 6 - 2 + (4 /3) - 2 + 6 - 8 - 3 + 5 - 2 + ((5 * 3) / 3) + 6 - 8 + 14 - 2 + 5 - 4 + ((3 * 22) / 7) + 9 - 4 + 5 - 2 + 4 + 5 - 2 + (3 / 15) + (4 / 55) - 2 + 5 - 5 - 5 - 5 - 5 - 5 + 6 - 8 = 29.0295929, 29.0295929-29.0295929=[6r/6t + 6(r * u)/6x + 6(r * v)/6y + 6(r * w)/6z]=0, 0+6-2/4+8-9= 4.5,log(4.5 * 100) = 2.65321251, 2.65321251 - 7 + (6 / 4) + 2 - 5 + 4 - 5+ 3 + 6 - 7 + 2 + (-2.84) = -5.68678749, 5.68678749 - 5.68678749=[6r/6t + 6(r * u)/6x + 6(r * v)/6y + 6(r * w)/6z]= 0
r= density
x, y, and z are special coordinates
The w component is in the z direction
The v component is in the y direction
Et means total energy
Re is Reynolds's number
[6r/6t + 6(r * u)/6x + 6(r * v)/6y + 6(r * w)/6z]=0 in this sense

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Nomenclature Rules: applies to a list of names or terms put into certain classifications and ordered groups.
