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| **Lesson Number – 20.2** | | | | |
| **Lesson Title – The ideal gas law** | | | | |
| **Specification Reference** | | | **3.6.2.2 / 3.6.2.3** | |
| **Learning Objectives** | | | | |
| Gas laws as experimental relationships between *p*, *V*, *T* and the mass of the gas.  Ideal gas equation: *pV* = *nRT* for *n* moles and *pV* = *NkT* for *N* molecules.  Avogadro constant *N*A, molar gas constant *R*, Boltzmann constant *k*  Molar mass and molecular mass. | | | | |
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| **Opportunities for Assessment** | | | | |
| Page 322 questions | | | | |
| **Starter:** | Slide #1 enables the students to recap and discuss the previous lesson on the gas laws  Slide #2 builds on this slightly by reaffirming what is meant by an ideal gas | | | |
| **Main:** | Slide #3 explains Brownian motion – a demonstration of this with smoke particles is possible however it is very difficult to achieve effectively  Slides #4 to #6 explain the Avogadro constant and moles – Chemists may well have covered this but their preconceptions may be incorrect  Slide #7 is animated slightly and shows how the ideal gas equation is created from the previous three laws. Higher level students should be able to do this themselves  Slides #8 and #9 go over the two forms of the formula and the respective constants *R* and *k* | | | |
| **Plenary:** | Slide #10 is a summary of the lesson | | | |
| **Homework:** | | Page 322 questions, research and biography of Avogadro | | |
| **Differentiation / Extension / S&C** | | | | |
| Creation of the ideal gas laws from the basic gas laws and molecular theory | | | | |
| **Numeracy / Literacy** | | | | **SMSC / Fundamental British Values** |
| Combining formulae to create the ideal gas law | | | | Realisation that the full understanding of the gas laws comes from combining research and work from several scientists over decades of work. |
| **RESOURCES:** | | | | |
| None | | | | |
| **Risk Assessment** e.g. CLEAPSS card reference | | | | |
| N/A | | | | |
| **Working Scientifically (HSW)** | | | | |
| Links between Physics and Chemistry (Molecules and Avogadro constant) | | | | |