HYDRODYNAMICS: AN EXPERIMENTAL VIEW ON BIO-MOLECULE (REVISED)

By

JAYDIP DATTA

Transition , Dimensionless Number , Vortex , Magneto-hydrodynamics , Denaturation ,
Biological fluid flow , Gaussian Distribution , Bio-polymers

As we all know that Fluid Mechanics consists of fluid Statics and fluid Dynamics .

The fluid statics consist of Flow pattern like Laminar ,Turbulent through the most

Important dimension less number like Reynolds's Number (N_{re}) has a fixed

Domain between average velocity of the Fluids (Compressible) from laminar to

Turbulent zone with a domain point ie Transition neither of these two .

The Vortex of fluid flow has different geometrical pattern of fluid . The hydrodynamics

is strictly restricted to fluid dynamical parameters related to solution . The main

modelling equations of Fluid Dynamical Equations used to simulate any important variable

containing equations like COZENY KARMAN , BLAKE PLUMMER , FANNINGS

EQUATION etc . The effect of magnetic field on hydrodynamics can be termed as

HYDROMANETICS or Magneto - HYDRODYNAMICS.

The diffusive nature of fluid dynamics can be correlated by the combination of Heat

and Mass Transfer Characteristics . This type of Experimental study depends on some

important dimensionless number like Re, Prandtl (Pr) , Nusselt (Nu) number .The

simultaneous effect of heat & momentum transfer involving the above dimensionless

number may be better explained by diffusive heat , mass transfer at molecular level &

momentum transfer .

The Hydrodynamics or fluid dynamics play an important role on flow of different bio-

molecule like denaturation effect of egg albumin , the flow ability of blood – a proto-

porphyrin chelate having a para / diamagnetic behaviour depending on the spin state of Fe

(II) . The random nature of Bio-molecules rather biopolymers depends on pH at a

particular temperature. The probability $P(x)$ at the central limit follows a Gaussian

distribution can be expressed as $P(x) = A \cdot \exp(-B \cdot x^2)$, with x is equal to the distribution length .

REFERENCES :

1. JAYDIP DATTA , PHOTO BIOLOGY : AN APPLICATION OF PHOTO CHEMISTRY ,September 2019 ,DOI: [10.13140/RG.2.2.27100.95363/2](https://doi.org/10.13140/RG.2.2.27100.95363/2) ,License [CC BY-SA 4.0](https://creativecommons.org/licenses/by-sa/4.0/) .

(https://www.researchgate.net/publication/335631708_PHOTO_BIOLOGY_AN_APPLICATION_OF_PHOTO_CHEMISTRY?_sg=mPSdv1DoQDcO9T4ic5jQiEi_liWy_wQmqXPdlrJtvPPqx8NCB_Fmzq1TDGWJ7hHrKxS9E5slZvWfUR_B5ms8FuNWWaWHrVrTj6k4atDk.O_V8aKsl2O22en-8scug-ihell75ROBWaJhQ5DsLpU4dlsjuoXM_YyAA1vCeullaaFGrK8qkW5LZuL9y4gahVg) .

2. JAYDIP DATTA , MOLECULAR CFD : AN ALTERNATIVE APPROACH TO HYDRODYNAMIC MODELLING ,July 2019 ,DOI: [10.13140/RG.2.2.29747.78886/7](https://doi.org/10.13140/RG.2.2.29747.78886/7) .

(

[https://www.researchgate.net/publication/334771118_MOLECULAR_CFD_AN_ALTERNATIVE](https://www.researchgate.net/publication/334771118_MOLECULAR_CFD_AN_ALTERNATIVE_APPROACH_TO_HYDRODYNAMIC_MODELLING?_sg=4MA1TCgpXTjjDOgoQIPJF0R138kcEI7FzTUfaiN7s87bGh2IB4bqZUOxHAgOy5YSOpIEwDBIzwnlbjXq6aNFH21euoU1w-mW8mxXZVNI.ULG4Bg7hPIJNTfhZORJy25NzID5OXVilUle_ZW3xXhS1OK5C1KHC2r5TkMz1WML3Ex4bOgpozCWapzadQKQ0eA)

[APPROACH_TO_HYDRODYNAMIC_MODELLING?_sg=4MA1TCgpXTjjDOgoQIPJF0R138kcEI7FzTUfaiN7s87bGh2IB4bqZUOxHAgOy5YSOpIEwDBIzwnlbjXq6aNFH21euoU1w-mW8mxXZVNI.ULG4Bg7hPIJNTfhZORJy25NzID5OXVilUle_ZW3xXhS1OK5C1KHC2r5TkMz1WML3Ex4bOgpozCWapzadQKQ0eA](https://www.researchgate.net/publication/334771118_MOLECULAR_CFD_AN_ALTERNATIVE_APPROACH_TO_HYDRODYNAMIC_MODELLING?_sg=4MA1TCgpXTjjDOgoQIPJF0R138kcEI7FzTUfaiN7s87bGh2IB4bqZUOxHAgOy5YSOpIEwDBIzwnlbjXq6aNFH21euoU1w-mW8mxXZVNI.ULG4Bg7hPIJNTfhZORJy25NzID5OXVilUle_ZW3xXhS1OK5C1KHC2r5TkMz1WML3Ex4bOgpozCWapzadQKQ0eA))

3. JAYDIP DATTA , Gaussiun Probablity : Dimensional View ,May 2020 ,

DOI: [10.6084/m9.figshare.12195864.v1](https://doi.org/10.6084/m9.figshare.12195864.v1) ..

https://www.researchgate.net/publication/341443241_Gaussiun_Probablity_Dimensional_View?_sg=adnglsP_hlhZf89N463ligEy8aRsif9jdn_4UBnsAh_JMQQqkQMP4hrao1rndjYzHPMwhw6Ms9VQb8G5XN2bPqywZpkhZ1s79VMezEGp.afakdw9pd2j-7unF-LYySaITPqNvrebsfdQjS5Mc0hd4Nco-d39PmHiZ-uid3ofF1ZkWkMHdBOHcF2MtHgVSaw

(DATTA, JAYDIP (2020): Gaussiun Probablity : Dimensional View. figshare. Poster. <https://doi.org/10.6084/m9.figshare.12195864.v1>)