

Abstract Submitted
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Inherent Tension in Chemical Bonds¹ JAMES BROCK, QI LIAO,
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A method is provided for relating average internal tension in bonds between atoms
or monomeric units to the external tension applied to them using computer sim-
ulations. In dimensions greater than one, there is an average internal tension in
bonds on the order of 100 pN even in the absence of an externally applied tension.
This non-zero average internal tension is due to asymmetry of thermal fluctuations
of bond length and increases with increasing dimensionality. Results from molec-
ular dynamics simulations are in perfect agreement with analytical calculations of
tension.

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