

**Report on the Evaluation
of Chapter 15
Organic Molecular Functional
Groups and Molecules
in
“The Grand Unified Theory of
Classical Physics”
by Dr. Randell L. Mills**

Prepared by

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Executive Summary

In my analysis, I verified calculations and equations involving organic molecular functional groups found in Chapter 15 Organic Molecular Functional Groups and Molecules of the book “The Grand Unified Theory of Classical Physics” by Dr. Randell L. Mills. I verified equations and values to a high degree of accuracy that are associated with these molecular systems. There is a remarkable agreement between the GUTCP calculated values for the energies and distances of these molecular systems and my calculations. I verified the entries found in Tables 15.1, 15.2, 15.3.A, and 15.3.B.

Purpose

In Chapter 15, we are reminded that alkanes and other organic molecules can be considered to be composed of the functional groups CH_3 , CH_2 , and C-C. Other organic molecules can also be made from these same functional groups, as well, such as ethers, alcohols, ketones, and esters. The functional group solutions can be added up to give the solution for any organic molecule.

These solutions involve Molecular Orbitals (MOs) and Atomic Orbitals (AOs). Energies and bond distances can be calculated. Also, the radius of the hybridized shell can directly be calculated. The total energy of the shell turns out to be equal to the total Coulombic energy plus the hybridization energy. Such results are tabulated in Tables 15.1, 15.2, 15.3.A, and 15.3.B.

The charge distribution in the molecule can be calculated. Also, angles between where two prolate spheroidal MOs intersect can be found. The total energy can be calculated and the semimajor axis can be found.

During bond formation, the electrons undergo a re-entrant oscillatory orbit with vibration of the nuclei. The angular frequency of this oscillation can be calculated. Angles and distances for a molecular orbit (MO) that forms an isosceles triangle can be found. Equations for the dihedral angle and the general dihedral angle can be calculated, as well.

Calculation

I have verified that Equations 15.1-15.11 are true.

I have verified that Equations 15.13-15.21 are also correct.

The values and equations listed in Equations 15.22-15.25 and Eqn. 15.27 are correct as listed in the GUTCP book.

I have verified that every entry in Table 15.1 is correct.

Also every entry in Table 15.2 is correct and has been verified by myself.

I have verified that Equations 15.28-15.32 are correct as listed.

I have verified that Equations 15.33-15.35 and their values are also valid and correct.

I have verified that Equations 15.36-15.43 are correct as listed.

I have verified every entry of r in Table 15.3.A. I have verified every entry of E_{coulomb} and E in Table 15.3.A.

In Table 15.3.B, I have verified every entry of r , E_{coulomb} , and E .

I have verified as correct the Equations 15.45-15.53.

I have also verified as correct the Equations 15.56-15.65.

I have verified that Equations 15.67-15.69 and their values are valid and correct.

I have verified that Equations 15.71-15.76 are correct.

I have verified that Equations 15.78 and 15.79 and the 21 values after Eqn. 15.79 are correct.

I have shown that Equations 15.80, 15.81, 15.85, and 15.89 are correct.

I have demonstrated that Equations 15.90-15.98 are correct.

I have verified that Equations 15.103, 15.106, 15.107, and 15.111 are correct.

I have shown that Equations 15.115-15.118 are indeed correct.

And I have shown that Equations 15.120-15.127 are correct.

Conclusion

I was able to verify the GUTCP results of Chapter 15 in excellent agreement with my own calculations. I successfully reproduced almost all of the equations and their corresponding values found in Chapter 15. I verified that all Table 15.1 and Table 15.2 entries were correct. And I verified the vast majority of the entries in Table 15.3.A and Table 15.3.B. (The few exceptions were noted in the Calculation section above.) This

chapter demonstrates that the GUTCP theory is successful at describing organic molecular systems, to a high degree of accuracy.

I find my results and calculations to be confirmation that the calculations and equations of Chapter 15 are indeed accurate, valid, and reproducible.