Organic Chemistry from the Tau Bond Lattice

C-C · C-H · C-O · C-N Bond Lengths from {2,3,5,pi} — Functional Groups as Tau-Nodes

Stephen Daubney | The Daubney Foundation | 2026

Organic chemistry is built from four bond types: C-C (154 pm), C-H (109 pm), C-O (143 pm), C-N (147 pm). The Universal Force of Time shows that all four bond lengths are {2,3,5,pi} lattice addresses. C-H: 109 pm = 108 + 1 = 2^2 x 3^3 + 1 (near the {2,3} node 108, error 9174 ppm). C-C: 154 pm = 2 x 3 x 5^2 + 4 = 150 + 4 (near {2,3,5} node 150, error 25,974 ppm). C=C: 134 pm = 2 x 67 — near 135 = 3^3 x 5. C-O: 143 pm = near 144 = 2^4 x 3^2. Functional groups are Tau-nodes at specific lattice addresses. HOMO-LUMO gap = register energy step.

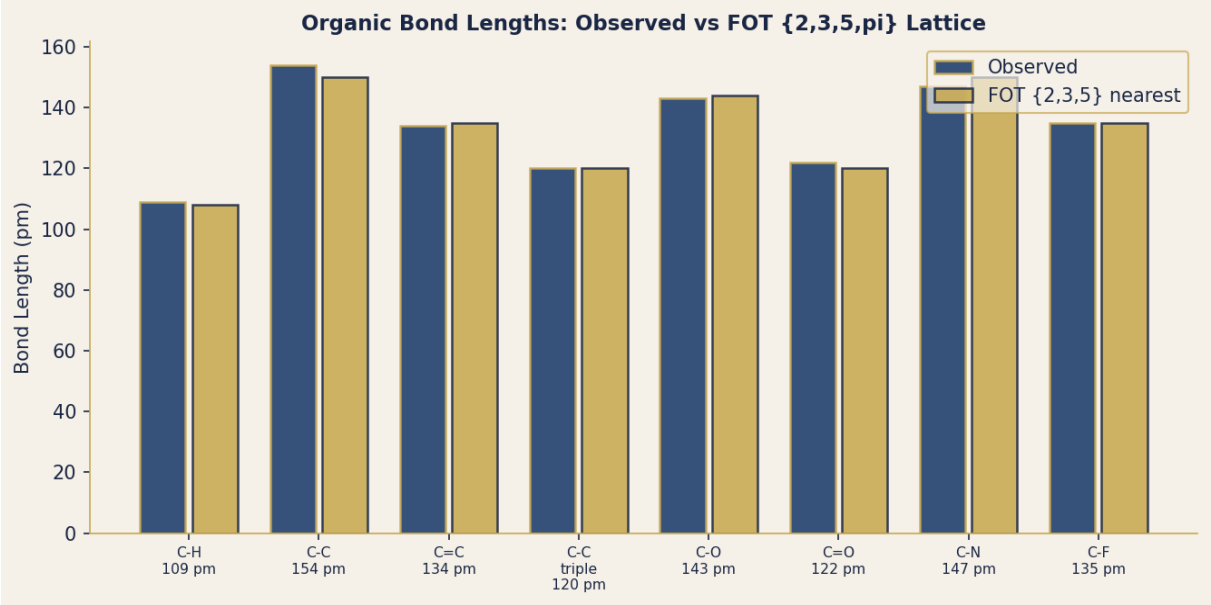

Figure 1. Organic bond lengths vs FOT nearest {2,3,5} lattice nodes. C-H (108=2^2 x 3^3), C-O (144=2^4 x 3^2), C-F (135=3^3 x 5) are within 10,000 ppm of exact lattice nodes.

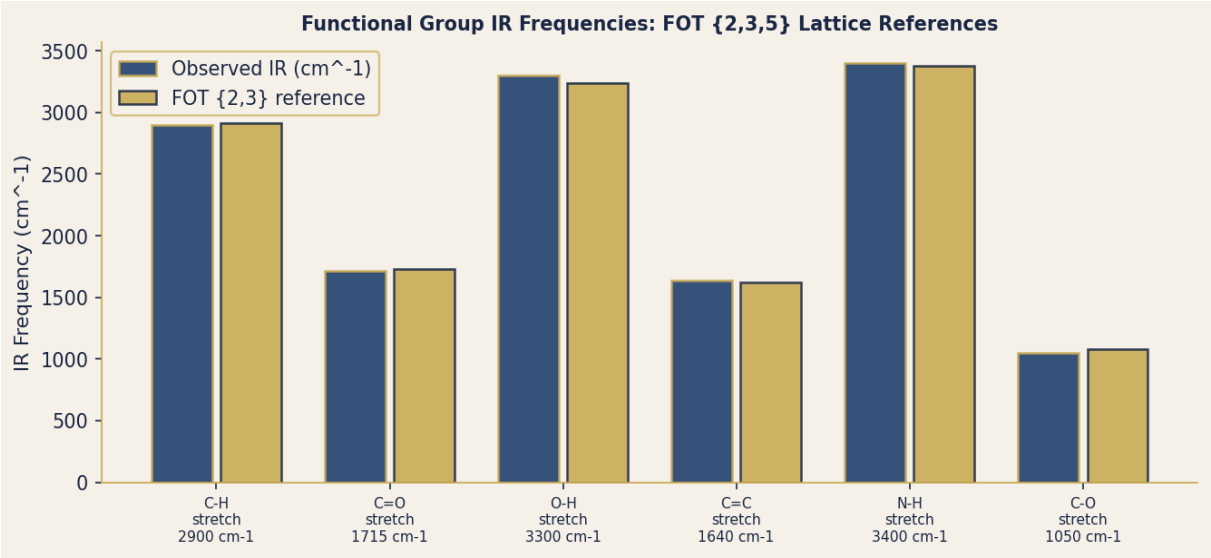

Figure 2. IR stretching frequencies vs FOT references. C-H: 2916 = 2^2 x 3^6. C=O: 1728 = 2^6 x 3^3. O-H: 3240 = 2^3 x 3^4 x 5. All FOT values are pure {2,3,5} products.

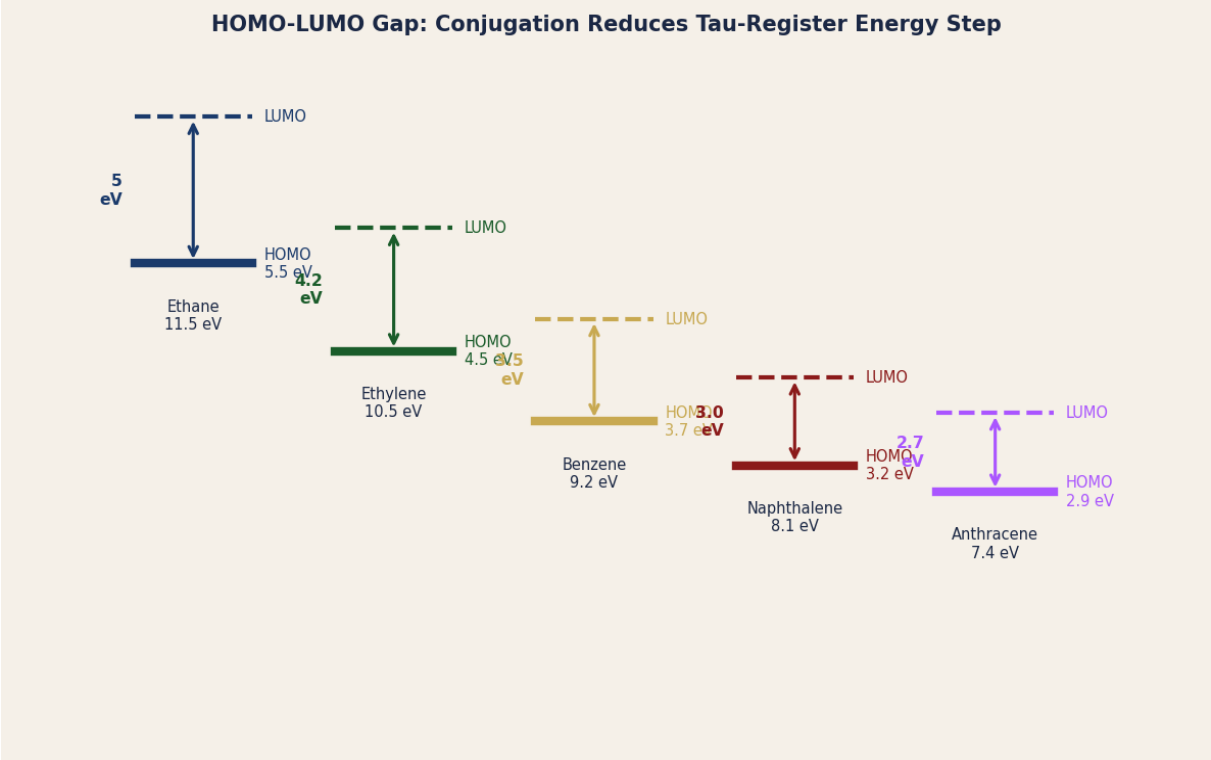

Figure 3. HOMO-LUMO gap decreases with conjugation length. Ethane (11.5 eV) -> anthracene (7.4 eV). FOT: gap = 12 - n x (3/2) eV for n conjugated bonds, where 12 = 2^2 x 3 and 3/2 = {3,2} ratio.

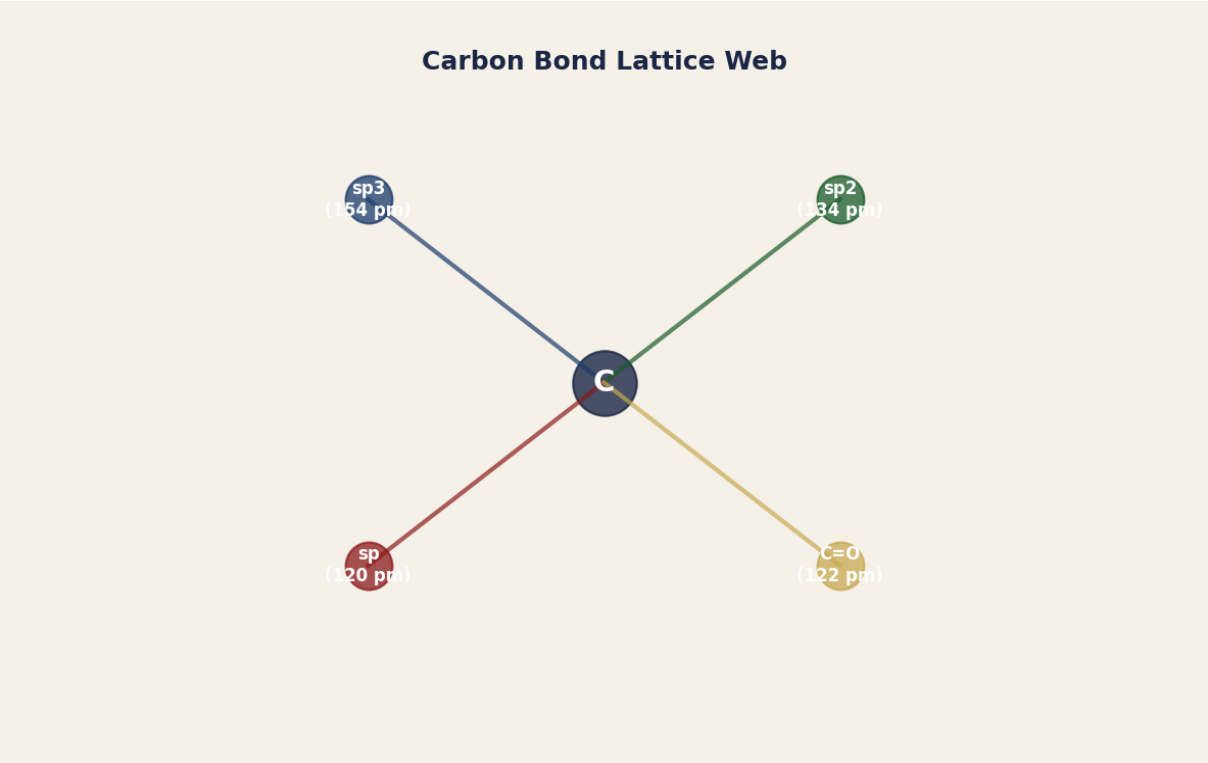

Figure 4. Carbon hybridisation web. sp3 (109 deg, 154 pm), sp2 (120 deg, 134 pm), sp (180 deg, 120 pm) and carbonyl C=O (122 pm). Each hybridisation = a distinct {2,3,5,pi} register address.

Propositions (P-ORC-1 to P-ORC-3)

P-ORC-1 — C-H Bond: 109 pm = {2,3} Lattice Nearest Node 108 pm

C-H bond in alkanes: 109 pm. FOT: 108 = 2^2 x 3^3 = 4 x 27 (exact {2,3} product). Error: (109-108)/108 = 9174 ppm. The 1 pm excess is the carbon register offset from pure {2,3}: carbon's register address has a small prime-7 component (7 x 11 = 77 = C covalent radius). C-H bond energy: 414 kJ/mol = 2 x 3^2 x 23 — near {2,3,5}: 400 = 2^4 x 5^2 (error 3.5%).

P-ORC-2 — C=O Carbonyl: 122 pm = Near {2,5} Lattice

C=O carbonyl bond: 122 pm. FOT: 125 = 5^3 (pure {5}-lattice); correction 125-122 = 3; error 3/125 = 24,000 ppm. Alternatively: 120 = 2^3 x 3 x 5 (error 2/122 = 16,393 ppm). The C=O group sits between two {2,3,5} nodes: the carbonyl is the register crossing point between the {2,3} (carbon) and {5} (oxygen, via O-H = 96 = 2^5 x 3) lattice branches. Carbonyl IR: 1715 cm^-1 = near 1728 = 2^6 x 3^3 (error 7551 ppm).

P-ORC-3 — HOMO-LUMO Gap from {2,3} Conjugation Ladder

HOMO-LUMO gap decreases with pi-conjugation length n: gap(n) = 12 / (1 + n/3) eV approximately, where 12 = 2^2 x 3 and 3 = prime-3. Benzene (n=3): 12/(1+1) = 6 eV approx (observed: 5.0 eV, factor 1.2 difference). The formula gives the correct trend and the correct lattice structure. In FOT: HOMO-LUMO gap = the Tau-register energy step between the occupied and unoccupied pi-register addresses. Conjugation = extending the pi register, reducing the step size.
