A NEW BOOK BY US ENTITLED **"FUNDAMENTALS OF MOLECULAR SYMMETRY"**

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In 1998 we wrote the research level text **Molecular Symmetry and Spectroscopy**,[a] and we have now written a new book, at the student level, on the broader subject of molecular symmetry.[b] This 358 page paperback (costing $44.99) explains the basis for what is called 'symmetry' in chemistry and shows how it is used to solve problems in spectroscopy and molecular orbital theory.

Part 1: We explain what spectroscopy is in the 12 pages of chapter 1, what quantum mechanics is in the 25 pages of chapter 2, and explain how electronic, vibrational and rotational wavefunctions and energies are obtained in the 69 pages of chapters 3,4 and 5.
Part 2 (pages 111-176): We introduce geometrical symmetry and point groups. By defining what 'symmetry' really is we introduce molecular symmetry (MS) groups, and then show how point groups arise by approximation.
Part 3 (pages 177-290): Applications. We discuss statistical weights; the determination of rotational, vibrational and electronic symmetry; rotation-vibration interactions; spectroscopic selection rules; the conservation of orbital symmetry; and more.
Part 4 (pages 291-319): We discuss other symmetries, and in the final chapter we outline current research on symmetry breakdown. There are a large number of problems, and the answers to a selection of them are given in an appendix.

Our motivation is to give an introductory, and balanced, account of the use of both point group symmetry and nuclear permutation-inversion symmetry in chemistry, with examples chosen from the current literature.

[a] http://pubs.nrc-cnrc.gc.ca/cgi-bin/rp/rp2_book_e?mlist2_90. The first four chapters of the book can be downloaded from this website.
[b] **Fundamentals of Molecular Symmetry**, Institute of Physics, Philadelphia, 2005. http://bookmark.iop.org/bookpge.htm?&isbn=0750309415