
Think It Over



This section of Resonance is meant to raise thought-provoking, interesting, or just plain brain-teasing questions every month, and discuss answers a few months later. Readers are welcome to send in suggestions for such questions, solutions to questions already posed, comments on the solutions discussed in the journal, etc. to Resonance Indian Academy of Sciences, Bangalore 560 080, with "Think It Over" written on the cover or card to help us sort the correspondence. Due to limitations of space, it may not be possible to use all the material received. However, the coordinators of this section (currently A Sitaram and R Nityananda) will try and select items which best illustrate various ideas and concepts, for inclusion in this section.

What's in a Name?

The article on unusual isomers of benzene featured in *Resonance*, Vol. 1, No. 2 has elicited many interesting responses from our readers. Quite a few have pointed out that isomer 2 with two triple bonds was incorrectly called dimethylbutadiene (instead of *diyne*). Some have ventured to name the isomer following the rules of the International Union of Pure and Applied Chemistry, but were not successful in the process. The correct IUPAC name is 2, 4-hexadiyne.

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Professor Manfred Christl has written that he was quite pleased that the isomers made by his group were named after him in the article. But he wonders whether *Shakespeare benzenes* should be called *Johnson benzenes*. Although William C Shakespeare is the first author of the publication on these isomers, Professor Richard P Johnson is the senior author. Given two possibilities, I used the name that is likely to catch the attention of students and teachers. But there is nothing official about it! After all, *Shakespeare*



benzenes by any other name would be just as interesting, from the chemical point of view.

J.Jebakumar, Lecturer at Madras Christian College, has considered the stability and possible formation of other isomers related to those discussed in the article. In particular, he has suggested that the variant cyclohex-1-ene-4-yne may be more stable than the isomers mentioned. High level quantum chemical calculations are often very useful in predicting the relative energies and electronic structures of small molecules of this type. For the interested readers, some important references to experimental and theoretical work on these isomers are given below.

Suggested Reading

- ◆ W C Shakespeare and R P Johnson. *J. Am. Chem. Soc.* Vol 112. pp 8578–8579, 1990.
- ◆ M Christl, M Braun and G Muller. *Angew. Chem. Int. Ed. (Engl.)*. Vol 31. pp 473–476, 1992.
- ◆ R Janoschek. *Angew. Chem. Int. Ed. (Engl.)*. Vol 31. pp 476–478, 1992.



Taylor Series - a Matter of Life or Death

Mathematics can even be a matter of life or death. During the Russian revolution, the mathematical physicist Igor Tamm was seized by anti-communist vigilantes at a village near Odessa where he had gone to barter for food. They suspected he was an anti-Ukrainian communist agitator and dragged him off to their leader.

Asked what he did for a living he said that he was a mathematician. The sceptical gang-leader began to finger the bullets and grenades slung around his neck. "All right", he said, "calculate the error when the Taylor series approximation of a function is truncated after n terms. Do this and you will go free; fail and you will be shot". Tamm slowly calculated the answer in the dust with his quivering finger. When he had finished the bandit cast his eye over the answer and waved him on his way.

Tamm won the 1958 Nobel prize for Physics but he never did discover the identity of the unusual bandit leader. But he found a sure way to concentrate his students' minds on the practical importance of Mathematics.

From The Observer (UK)

