

# "ALL THE WAYS TO HAVE A BOND"

**Prof. Dr. Roald Hoffmann**

**(1981 Nobel Prize in Chemistry)**

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**12pm (BRT time)**

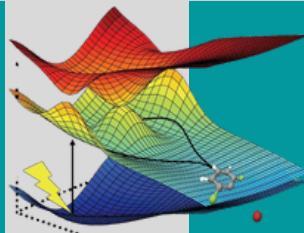
**Webinar Link:**

**<https://youtu.be/Nom9GgavLEY>**

## **ORGANIZATION AND INFORMATION:**

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## **ABSTRACT**

The concept of a chemical bond, so essential to chemistry, and with a venerable history, has life, generating controversy and incredible interest. Even if (or maybe because) we can't reduce it to physics. I will discuss some of the common experimental criteria for judging the presence and strength of a bond: length, energy, force constants, magnetism, energy splittings and other spectroscopic criteria. On the theoretical side, I will look at bond orders, population analyses, bond critical points, and electron localization functions. And will give a personal opinion on the utility of the various measures. My advice at the end is likely to be: Push the concept to its limits. Think about any bond in terms of all the various criteria, experimental and theoretical, that we have discussed. Accept that (at the limits) a bond will be a bond by some criteria, maybe not others. Instead of wringing your hands about how terrible it is that this concept cannot be unambiguously defined, have fun with the fuzzy richness of the idea. Try to understand what motivates other people to say there is a bond there or isn't. Always think about what change (chemical perturbation) you can do to probe your ideas.