a point outside the classically permissible range of R. The complex can be trapped behind the barrier on E_1 for a long time, again leading to a reduced rate of dissociation compared to the preceding example. Indeed, for $\hbar\omega_3$ sufficiently small there will be no dissociation, as the relative shift of the two surfaces need not bring the vibrational level of our example above the dissociation threshold.

This analysis of photodissociation based on electronic-field surfaces is consistent with the Franck–Condon principle, but it is not quantitative at the present stage. However, quantitative predictions are possible with the electronic-field approach, and we are presently testing it on some model systems. We note, for sufficiently weak coupling between two electronic states of a diatom such as those treated here, that the range of frequencies in the ω_2 class is rather narrow. It is therefore possible that photodissociation of a diatom could exhibit some isotopic selectivity. That is, the vibrational levels of a diatom will shift as different isotopes are included, leading us to speculate that a laser of the proper frequency might excite one isotope to the "dissociation window" while raising others either too high or too low. We would not expect this mechanism to be extremely selective, but when used as the second stage of a laser isotope separation process it might prove useful nevertheless.

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Additions and Corrections

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Geoffrey A. Ozin: Metal Atom Matrix Chemistry. Correlation of Bonding with Chemisorbed Molecules.

Page 22. The following correction should be made in the caption to Figure 1: Change reference citation 1b to 6a.