cm^{-1} (symmetric). The average value of 2427 cm^{-1} is located between that for sp^3 and sp^2 hybridization and is consistent with the observed bond angle of 113° 52′.[12] From the stretching frequency, one can predict a value of J_{BH} to be about 110 cps based on the correlation.

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[12] W. Gordy, H. Ring, and A. B. Burg, *Phys. Rev.*, **78**, 512 (1950).

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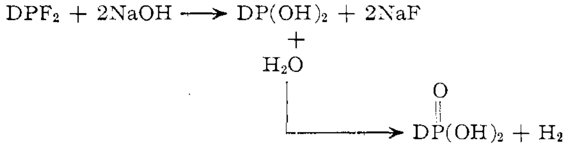
The Hydrolysis of Difluorophosphine

Sir:

In our original characterization of difluorophosphine[1] the following equation was suggested for the basic hydrolysis of the HPF_2

$$\mathrm{HPF_2 + H_2O \longrightarrow PF_2OH + H_2}$$

Such an equation implies hydridic behavior for the hydrogen attached directly to phosphorus. The reaction would be comparable to that of the M–H linkages in the silanes[2] and boranes. More recently, however, evidence has been obtained which suggests that the hydrogen of the P–H linkage tends to be more protonic (or truly covalent) rather than hydridic in behavior; hence, the original equation is probably incorrect. The point has been investigated in a tracer study. If the above process were correct, hydrolysis of DPF_2 by H_2O should give HD. When the basic hydrolysis was conducted, a mass spectral analysis of the liberated hydrogen indicated that *no* deuterium was present. This observation can be rationalized by the following mechanism which retains the integrity of the P–H bond throughout the entire hydrolysis operation



$$\mathrm{DPF_2 + 2NaOH \longrightarrow DP(OH)_2 + 2NaF}$$
$$\mathrm{DP(OH)_2 + H_2O \longrightarrow D\overset{\overset{O}{\|}}{P}(OH)_2 + H_2}$$

Clearly H_2 is arising from reduction of water by the strongly reducing $DP(OH)_2$. There is no real evidence for hydridic behavior of the hydrogen in HPF_2.

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[1] R. W. Rudolph and R. W. Parry, *Inorg. Chem.*, **4**, 1339 (1965).

[2] D. T. Hurd, "Chemistry of the Hydrides," John Wiley and Sons, Inc., New York, N. Y., 1952.

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