

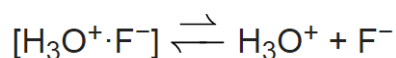
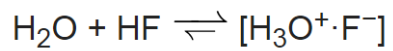
Question #74869, Chemistry / General Chemistry / Completed

What is the balanced equation for the reaction of HF with water?

- A. $2\text{HF} + \text{H}_2\text{O} \rightarrow \text{OH} + \text{H}_3\text{F}_2$
- B. $\text{HF} + \text{H}_2\text{O} \rightarrow \text{H}_3\text{O} + \text{F}_2$
- C. $2\text{HF} + \text{H}_2\text{O} \rightarrow \text{OH}^+ + \text{H}_3\text{F}_2^-$
- D. $\text{HF} + \text{H}_2\text{O} \rightarrow \text{H}_3\text{O}^+ + \text{F}^-$
- E. None of the Above

Solution

The ionization can be described as a pair of successive equilibria:



meaning that HF is extensively dissociated, but that the tight ion pairs reduce the thermodynamic activity coefficient of H_3O^+ , so that the solution is effectively less acidic. But still there ions of $\text{H}_3\text{O}^+ + \text{F}^-$ as the products.

Answer: D.

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