

Answer on the Question #43706, Chemistry, Physical Chemistry

Question:

The solubility of the salt MX in water is 1×10^{-4} mole/L. What is the value of K_{sp} for this salt?

Solution:

For the reaction $MX = M^{n+} + X^{n-}$, K_{sp} value is:

$$K_{sp} = [M^{n+}][X^{n-}]$$

The concentrations of M^{n+} and X^{n-} are:

$$[M^{n+}] = [X^{n-}] = S$$

where S is solubility. Then, the K_{sp} value is:

$$K_{sp} = [M^{n+}][X^{n-}] = S^2 = 10^{-8}$$

Answer: $K_{sp} = 10^{-8}$