Answer on Question #61643 - Chemistry - General Chemistry

Question:

A solution is two percent silver nitrate by mass. If the density of the solution is 1g/mL, what is the molarity of the solution?

Solution:

1) Define terms of expression of solution concentration:
   Percentage shows mass of compound in grams per 100 grams of solution.
   Molarity shows amount of moles of compound per 1 liter of solution.
2) From the given density of solution (1 g/mL) calculate mass of 1 L of the solution:
   1g/mL * 1000 mL = 1000g
3) Find the mass of silver nitrate in 1L of solution:
   1000g * 2% = 20g
4) Find the corresponding amount of moles of silver nitrate in 1L of solution:
   Molar mass of $AgNO_3$ = 107.9+14.0+3*16.0 = 169.9.
   20g equal to 20/169.9 = 0.12 moles.

Answer:

The molarity of the silver nitrate solution is 0.12 mol/L