Answer on the question #41952, Chemistry, Physical Chemistry

Question:

Hydrosulfuric acid H2S has two acid ionization constants. Write equations that correspond to each Ka value. Include states of matter in your answer.

__(aq) + __ (l) (arrow pointing right) H3O __ + __ Ka= 8.9 x 10^-8

__(aq) + __ (l) (arrow pointing right) H3O __ + __ Ka= 1.0 x 10^-19

Answer:

$H_2S_{aq} + H_2O = H_3O^+ + HS^-$, $K_a = 8.9*10^{-8}$

$HS^- + H_2O = H_3O^+ + S^{2-}$, $K_a = 1.0*10^{-14}$

Perhaps, there is a mistake in the task, because the power is 14, not 19.

Constant decreases from the first stage of ionization to second. It can be seen that the second proton is removed from a negatively charged species. Since the proton carries a positive charge extra work is needed to remove it; that is the cause of the trend noted above.