ESR DETECTION OF SOLVATED ELECTRONS IN A RARE GAS HOST: NEON AT 3 K

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A symmetric ESR (electron spin resonance) absorption tentatively assigned to the free or solvated electron has been observed at the g_e free spin value of 2.002 in an X-irradiated (60 keV) neon matrix at approximately 3 K. This absorption (thermally stable up to 7 K) is strongest at ultra-low microwave power (nW) levels, where it is the only observable feature in the ESR spectrum. The intensity of the absorption is extremely sensitive to light and the presence of low levels of background gases, which are maintained at approximately 5 x 10^{-8} Torr in our apparatus. The monatomic carbon anion ($^4\Sigma$ C^-) and oxygen cation ($^4\Sigma$ O^+) have been eliminated as candidates for this absorption based on experiments with ^{13}C and ^{17}O.