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On the Nature of the Corona: The Electron Affinity of Metallic Hydrogen, not Extreme Temperatures, Generates Highly Ionized Gaseous Ions in the Outer Solar Atmosphere PIERRE-MARIE ROBITAILLE, The Ohio State University — The gas-based Standard Solar Model (SSM) must assume that the corona is excessively hot (millions of K) in order to account for solar winds and the existence of highly ionized atoms in this region of the Sun. Conversely, within the context of the liquid metallic hydrogen solar model (LMHSM), solar winds are driven by exfoliative processes occurring within layered metallic hydrogen in the solar body. The LMHSM also advances that condensed matter is interspersed throughout the corona. This is supported by the relatively cool continuous spectrum of the K-corona which reveals that photospheric material has been ejected into, and now exists, in the outer atmosphere of the Sun. It is proposed that since condensed matter can be characterized by powerful electron affinities, that coronal material can strip adjacent gaseous atoms of their electrons. In this fashion, coronal metallic hydrogen generates highly ionized ions while at the same time helping to preserve the neutrality of the solar body, as it works to channel electrons back towards the solar surface. As such, the apparent temperature of the corona is no greater than that of the photosphere and, in fact, slightly cools with elevation in accordance with the known reddening of the K-coronal spectrum. This removes the need to heat the corona in the SSM and prevents all violations of the second law of thermodynamics.

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