

Abstract Submitted
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On the Nature of the Chromosphere: Condensation and Line Emission PIERRE-MARIE ROBITAILLE, The Ohio State University — For a few seconds during an eclipse, the flash emission spectrum from gaseous atoms in the chromosphere can be observed. This layer of the Sun also has continuous emission, supporting the conjecture that condensed matter is also present. Contrary to the gaseous solar models which invoke collisional processes to account for the formation of emission lines, the simplest understanding of this behavior would be the evaporation of excited atoms from condensed surfaces existing within the chromosphere. This is reminiscent of the chemiluminescence which occurs during the condensation of silver clusters (Konig L., Rabin I., Schultze W., and Ertl G. Chemiluminescence in the Agglomeration of Metal Clusters. *Science*, v. 274, 1353). The condensation process associated with spicule formation, is an exothermic one, requiring the transport of energy away from the site of condensation. As atoms are leaving localized surfaces, their associated electrons could occupy any energy level, and hence a wide variety of emission lines could be produced. This also helps to explain the apparent heating of the upper chromosphere and corona and why spicules manifest a constant temperature over their entire length, even within a corona which appears much warmer.

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