

Abstract Submitted  
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**Ejection mechanisms for Martian meteorites** PAUL S. DE CARLI, Sri International/University College London, AHMED EL GORESY, Bayerisches Geoinstitut, University of Bayreuth, ZHIDONG XIE, THOMAS G. SHARP, Arizona State University — At least 34 meteorites have been identified by their characteristic isotope signatures as originating on Mars. The Martian origin of these meteorites is not in dispute. It is generally accepted that the meteorites were ejected from Mars as a result of asteroid or comet impacts. However, there is no agreement on the detailed mechanism by which these meteorites were accelerated to the Martian escape velocity of 5 km/s. The simplest mechanism, that the meteorites were accelerated by a strong shock, implies a minimum shock pressure of about 65 GPa. Evidence from the meteorites themselves implies that none of them have been subjected to shock pressures in excess of about 40 GPa. Measurements of the magnetic properties of Martian meteorite ALH 84001 indicate that the ejection event did not heat it above its curie temperature of about 40 C, implying a maximum shock pressure during ejection of less than 13 GPa. We have not been able to reproduce recent calculations that predict high velocity low pressure spalls. We explore the possibility that Martian meteorites are accelerated to escape velocity in a high velocity vapor or ejecta cloud.

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