

## **Vesicles as impact criteria**

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Vesicles of various size and shape are often observed in hand specimens of impactite rocks. Their occurrence are often explained as the consequence of degassing of simple molecules as water and carbon dioxide from the dominant silicate melts as the temperature and total pressure drops during the late stage of the impact event. The vesicle surfaces from these genuine gas bubbles are featureless, and overall such vesicles have been considered as a morphological element that does not reveal information of interest about the impact.

We have investigated vesicles in impactites from the confirmed crater at Wabar, Saudi Arabia (type IIIa iron meteorite). In addition to vesicles formed by gas exsolution, these impactites reveal abundant vesicles containing precipitates having solidified after the vesicle formation. The precipitates are partially embedded into the silicate glass indicating fluidity at the time of precipitation. We suggest that the precipitates, before they condensed, were the gas phase shaping the vesicle. This unique association makes such vesicles an excellent criteria for identifying impact structures.