CLASSIFICATION OF IMPACT MELT-BEARING IMPACTITES: A DISCUSSION. G. R. Osinski[1] and R. A. F. Grieve[1,2]. [1]Dept. of Earth Sciences, University of Western Ontario, London, ON, N6A 5B7, Canada. E-mail: gosinski@uwo.ca. [2]Earth Sciences Sector, NRCan, Ottawa, ON K1A 0E4, Canada.

Introduction: The production of melt is one of the most characteristic products of the impact cratering process. Our understanding of impact melting is, however, incomplete. This is due to several factors, including the erosional degradation of many terrestrial impact structures [1] and complications introduced due to inconsistent nomenclature and unqualified use of terms, such as "suevite", for several types of impactites, which may have different origins. We focus here on a discussion of the classification of impact melt-bearing impactites.

Effect of target lithology on impact melting: The presence of different rock types in the target introduces complexities to studying impact melting; however, recent work indicates that the fundamental processes of impact melting are essentially the same in sedimentary and crystalline targets such that the basic products are genetically equivalent but they just appear different [2, 3].

Impact melt-bearing impactites: The current IUGS classification of impactites distinguishes 3 main types of impactites (shocked rocks, impact breccias, impact melt rocks) and partitions impact melt-bearing lithologies between impact breccias and impact melt rocks. We suggest that the division is artificial and that there is actually a continuum from clast-poor coherent impact melt rocks to clast-rich impact melt rocks, where various melt phases are intermixed with clasts. We discuss here a recent new classification of impact melt-bearing impactites [3] – based on groundmass texture – and illustrate this with examples of impactites from the Haughton, Ries, Rochechouart, and Popigai impact structures. Our hope is that this classification system will stimulate discussion and prove useful in the field and laboratory setting. This classification is as follows:

Phaneritic: crystalline groundmass with individual grains visible with the naked eye. *Aphanitic:* crystalline groundmass with individual grains not visible with the naked eye. *Vitric/glassy:* glassy groundmass ± quench crystals ± vesicles. Vesicular: Aphanitic or glassy groundmass containing vesicles ± quench crystals. *Particulate:* heterogeneous, intermingled mixture of aphanitic or glassy melt phases in the groundmass; evidence for these phases being fluid during and after transport. Examples: crater-fill deposits at Haughton [4], parts of the Ries surficial suevites [5], and the "red suevite" from Rochechouart [6]. *Fragmental:* Clastic groundmass comprising angular lithic, mineral and glass fragments. This conforms to the original definition of suevite [7]. Examples: the impact breccias underlying the coherent melt sheet at Mistastin [8].

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