

Formation of Bubble Textures of Fusion Crust and Meteorite Interior of the Nio Meteorite: Application for Antarctic Meteorites and Asteroids.^{1,2} Y. Miura and ²G. Iancu,¹ Yamaguchi, Yamaguchi, Japan, ²Al.I.Cuza National University, Iasi, Romania.

Introduction:

Solid meteorites are considered to be greatly and mechanically formed on meteoroids and Asteroids in the solar system. Vapor and liquid states during meteoritic formation are easily evaporated not to observe it in macro-textures with many voids and melted fragments in meteoritic interior or surface. Recently, authors have been checked textures of meteorites including the Nio chondritic meteorite (H3/4) fallen in Niho, Yamaguchi, Japan [1]. The main purpose of the paper is to elucidate bubble texture of meteorites for application of Antarctic meteorites and Asteroids [2-4].

Bubble textures of the Nio meteoritic shower:

Fusion-crust of the Nio meteorite (H3/4) was formed at 1) normal entry to the Earth's atmosphere, and 2) air explosion (ca. 40km above) which are called generally as meteoritic showers. The thin sections of the showered Nio fragments reveal the following textures as follows [1-4]:

a) Various sizes (0.1 to 100 μ m) are connected to chondritic surface to interior, to arrange much concentrated bubble textures and impacted minerals of akaganite minerals to the boundary of the fusion-crust and interior surface as shown in Fig. 1.

b) By comparison of bubble texture at the boundary between the fusion-crust and chondritic surface, there are some bubble-like textures in deeper interior of the chondrite (as shown in Fig.2).

Shapes and rim-deposits in bubble textures:

Shapes of macro-bubbles in the fusion-crust are almost circular in macro-scale (cf. Fig.1), though micro-bubbles reveal rounded to irregular shapes with clear-rounded (in gas-rich) to rim-deposited (in melted and vaporized in some inclusions in bubble textures (in Fig. 2) [1-4]).

Formation of micro-bubble textures in meteorites:

Based on the above observed data, macro- to micro-bubble textures in the Nio meteorites are not direct textures of micro-impact process, because there are no direct impact process with broken shocked textures and shallow depth of micro-bubbles (observed in the SEM images). The similar micro-bubble textures with various size and shapes have been often observed at artificial melting products of coal ashes (called slag melting glasses).

The micro-bubble textures with irregular arrangements in meteorites are considered to be formed in meteoritic interior remnants (as meteoritic interior solidified process) during impact process of meteorite formation.

The present micro-bubble texture formation is considered to be applied for any Antarctic meteorites and Asteroids samples.

Summary:

The Nio meteoritic shower fragments show various bubble textures in fusion-crusts and meteorite interior comparatively. Micro-bubble textures in meteoritic interior which are formed in solidified process of meteoritic interior (also formed at artificial melting products) are applied to any Antarctic meteorites and Asteroid samples.

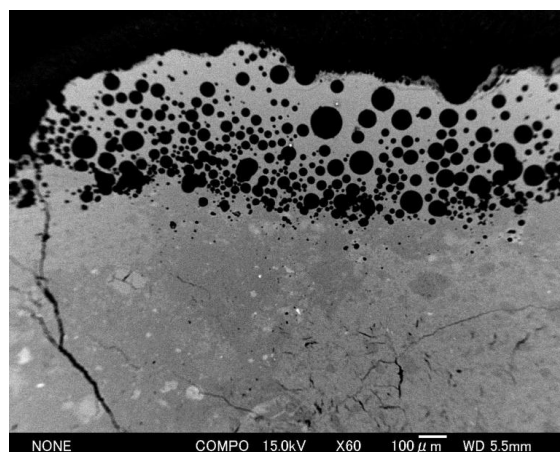


Fig.1. SEM image of the Nio meteorite (H3/4) with various bubble textures which are formed by meteorite shower in air before landing.

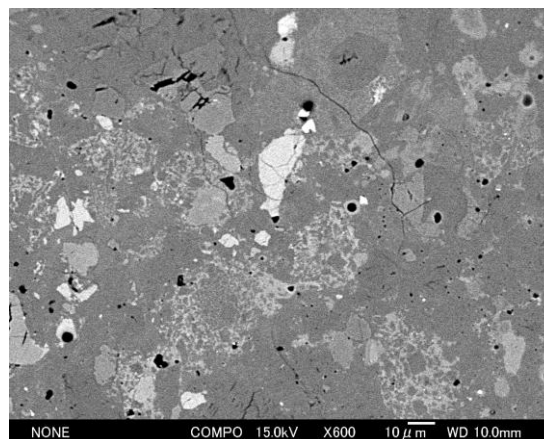


Fig.2. SEM image of the Nio meteorite (H3/4) interior with various micro-bubble textures formed by meteorite's interior solidification.

References:

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- [2] Miura Y. (2012) NTMS-2012 (Houston), #3100.
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