Meteoritics 18 (1983), p 272

their compounds (e.g. FeNi alloy and magnetite) are able to exert a catalytic influence on the decomposition of carbon-containing gases (e.g. carbon monoxide and hydrocarbons) (Baker and Harris, 1978). Such reactions often produce a characteristic suite of biproducts including intergrowths of metal, oxides, carbides, and filamentous carbon (Renshaw *et al.*, 1970). Our observations indicate that during the evolution of some IDP's catalytic decomposition of a carbon-containing gas occurred on the surfaces of FeNi alloy and magnetite grains.

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ALL-JIM: A LARGE Ca-Al-RICH CHONDRULE FROM ALLENDE (C3)

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All-Jim, a large (11 mm max. dia.) Ca-Al-rich chondrule from the Allende carbonaceous chondrite was investigated in detail with a microscope and an electron microprobe. It is egg-shaped and contains a large vesicle (of naturally variable diameter up to ~ 4 mm) which opens at one side towards the carbonaceous matrix. The vesicle is filled with matrix material which apparently differs in mineralogical and chemical composition from the matrix outside the chondrule.

All-Jim is a typical type B (Grossman, 1975; Clarke *et al.*, 1971) chondrule with igneous texture consisting mainly of coarse-grained melilite and fassaite. Some anorthite is present in interstices and small spinel crystals are ubiquitous in all phases but concentrated in melilite. Very small Fe-Ni and sulfide grains are found in places (no noble metals detected).

All-Jim is compositionally zoned similar to what has been described previously (Kurat *et al.*, 1975) but in a much more pronounced way. Melilite compositions vary strongly with distance from the chondrule surface: MgO and Na_2O contents increase from the chondrule surface (1.5, 0.03%) towards the interior (9.8, 0.14%) and decrease again towards the excentrical vesicle. Alumina shows an opposite trend (34.4-12.9%). Fassaite is much less variable and exhibits considerable variability only in TiO_2 (12.2% at surface, 6.9% in interior). Noteworthy is the appreciable Cr_2O_3 content (0.11%) in fassaite in the chondrule interior.

All-Jim is also delicately covered by a thin (~ 20 μm) spinel envelope (rim) consisting of Al-spinel with 9% FeO.

Some conclusions: Once upon a time, when the Sun started to form, there was a chunk of matter floating towards the Sun (Morfill, 1983), together with many others and huge amounts of gas. Gradually it became warmer and warmer. More and more of the less and lesser volatile elements started to leave (Kurat, 1970), metals segregated in the reducing environment and silicates recrystallized to form a coarser grained metamorphic rock. Over the many years, T increased steadily, inducing partial melting and intensified volatilization. Eventually, melting reached a degree large enough for the chunk to start to re-shape into a chondrule. Because of volatilization, only a small proportion (~ 0.2) of the original matter was left. Fortunately, good winds took it, moved it out of the main river floating towards the Sun and saved it for Allende and us. During that journey, T decreased only gradually, leading to profound additional mass loss, some recrystallization and the strong compositional zoning now observed.

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ON THE CORROSION AND PRESERVATION OF IRON

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The majority of iron meteorites have been found long after they fell and therefore have for a long time been exposed to terrestrial corrosion. The finegrained ataxites of group IVB survive comparatively well, while other classes such as the coarsest octahedrites of group IIB and coarse