



Antarctic Meteorite NEWSLETTER

A periodical issued by the Antarctic Meteorite Working Group to inform scientists of the basic characteristics of specimens recovered in the Antarctic.

Volume 5, Number 4

November, 1982

Supported by the National Science Foundation, Division of Polar Programs, and compiled at Code SN2, Johnson Space Center, NASA, Houston, Texas 77058

This is a special announcement about the availability of a meteorite - Allan Hills A81005 - for issue. This particular specimen has been characterized as an anorthositic breccia and appears to be a very rare bird. In keeping with the policies of the Meteorite Working Group, a meteorite is not eligible for allocation until it has been characterized and that information published in the newsletter. This special newsletter formalizes the announcement of ALHA81005, making it available for study.

Given the apparent rarity of this specimen, the Meteorite Working Group prefers to select a consortium of scientists for the analysis of this meteorite. Therefore, proposals from interested scientists who seek to form collaborative efforts and describe these collaborations in detail will be given first consideration. Individual scientists proposing to do specific studies will also be considered but they may be required to join an existing consortium.

The striking similarity of this specimen to lunar anorthositic breccias has sparked speculation that the sample may be lunar in origin. Part of the rationale for this special announcement is the importance of an early resolution of the question of lunar origin. Consortia proposals should address how they will approach that issue.

Proposals should be specific in nature, name all participants and contain sufficient background and justification for evaluation by the Meteorite Working Group. It is requested that letter proposals arrive by 1 December, 1982, at the following address:

The Secretary, Meteorite Working Group
Code SN2 - Planetary Materials Branch
NASA/Johnson Space Center
Houston, TX 77058

It is hoped that preliminary results can be made available by the Fourteenth Lunar and Planetary Science Conference.

ANTARCTIC METEORITE DATA SHEET

Sample No. ALH81005 Location Allan Hills
Field No. 1422
Weight (gms) 31.4 gm
Meteorite Type Anorthositic Breccia

Physical Description: Roberta Score

This is an unusual looking sample! Flow marks are apparent on the exterior which is covered with a pitted, glassy, greenish-tan colored crust. Immediately underneath this crust, the surface is a "dusty" gray color.

The interior consists of abundant angular clasts, which range in color from gray to white, set in a black matrix. The size of the clasts are as small as submillimeter and as large as 8mm in diameter. The sample is very coherent. Some areas of oxidation were noted.

Dimensions: 3 x 2.5 x 3 cm

Petrographic Description: Brian Mason

ALH81005: Examination of polished thin section

The specimen is a microbreccia of clasts (maximum dimension 4 mm) in a translucent to semi-opaque dark brown glassy matrix showing flow structure in places; clast:matrix ratio is approximately 40:60. The larger clasts are polymineralic, the smaller (less than 0.5 mm) may be individual mineral grains. The clasts consist largely of plagioclase, together with some pyroxene and occasional olivine; most of the mineral grains are plagioclase. The clasts show a variety of textures, including gabbroic, diabasic, and basaltic; many have been shocked and partly granulated. Some of the clasts resemble eucrites, but many appear to be more feldspathic than most eucrites. The section is notable for the complete absence of opaque minerals, except for a 1 mm metal grain. Microprobe analyses show that the plagioclase is very Ca-rich, averaging An 97 (range An 95-98); pyroxene is variable in composition, Wo 1-41, En 44-79, Fs 7-47 (richer in En than most eucrite pyroxenes); several grains of olivine, Fa 11-40, were analyzed. The meteorite is a breccia, but more feldspathic than most eucrites; some of the clasts resemble the anorthositic clasts described from lunar rocks.

Brian Mason
September 1, 1982