# 60635

Basaltic Impact Melt

15 grams


*Figure 1: Photo of 60635. Scale in cm and mm. S73-20489*

## Introduction

60635 was collected as a rake sample near the LM (see section on 60600). It has a basaltic texture.

## Petrography

Dowty et al. (1974), Warner et al. (1976) and Ryder and Norman (1980) describe 60635 as an igneous rock (figures 1 and 2). Deutsch and Stoffler (1987) found that there were two different regions, both with basaltic texture, but with different grain size. They show a picture of the contact, and found different ages for the two regions.

Deutsch and Stoffler describe 60635 as: *"a coarse-grained subophitic impact melt rock with anorthite laths ($An_{92-96}$) and pyroxene (low- and high-Ca) as a interstitial phase; olivine is lacking (figure 2). Besides nearly pure ulvospinel, Fe-metal, troilite and a K-rich mesostasis are present".*

The relatively high Ni content of Fe-metal grains indicates that this rock is an impact melt (figure 4).

Dowty et al. (1974) give an analysis of ulvospinel.

## Chemistry

Dowty et al. (1974) and Warner et al. (1976) determined the composition by broad beam electron probe analysis (table 1).

## Radiogenic age dating

Deutsch and Stoffler (1987) found two ages for pieces of 60635 (figure 5).

## Processing

There are only 2 thin sections, but enough material for more analyses.

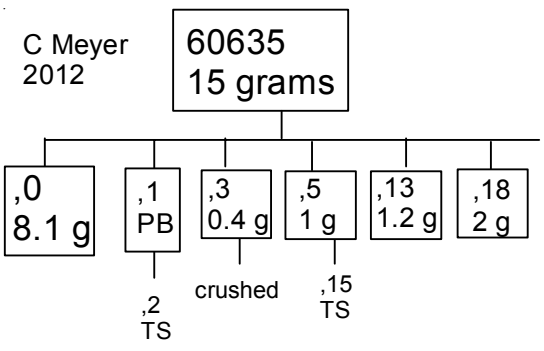

*Figure 2: Photo micrograph of thin section of 60635 (Warner et al. 1976).*

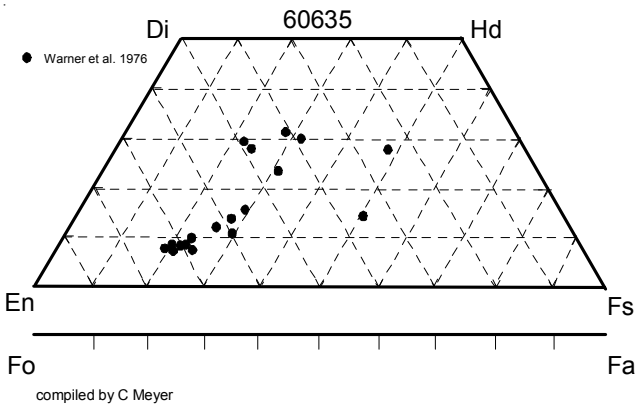


*Figure 3: Compostion of pyroxene in 60635 (Warner et al. 1976).*

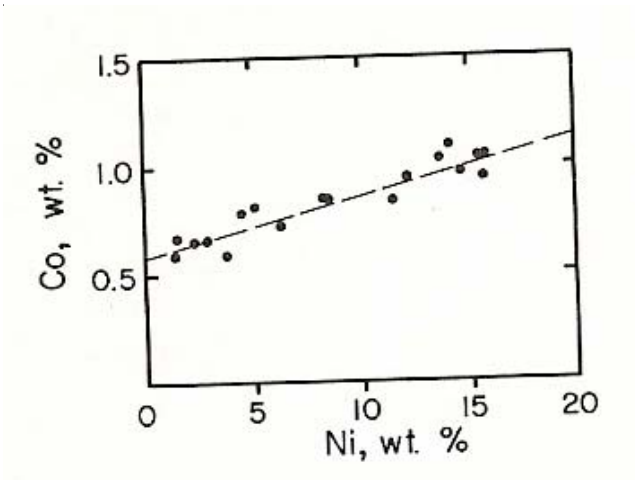


*Figure 4: Composition of metallic iron grain in 60635 (Dowty et al. 1974).*

## Table 1. Chemical composition of 60635

| *reference* | Warner76 | | Ryder82 | |
|---|---|---|---|---|
| *weight* | | | | |
| SiO2 % | 45.8 | (a) | 47.3 | (b) |
| TiO2 | 0.34 | (a) | | |
| Al2O3 | 27.6 | (a) | 25.9 | (b) |
| FeO | 4.7 | (a) | 5.2 | (b) |
| MnO | 0.04 | (a) | | |
| MgO | 4.1 | (a) | 5.9 | (b) |
| CaO | 15.8 | (a) | 15.1 | (b) |
| Na2O | 0.54 | (a) | 0.48 | (b) |
| K2O | 0.09 | (a) | 0.1 | (b) |
| P2O5 | 0.09 | (a) | | |
| S % | | | | |
| *sum* | | | | |
| | | | | |
| Sc ppm | | | 7 | (b) |
| V | | | | |
| Cr | | | | |
| Co | | | 29 | (b) |
| Ni | | | | |
| La | | | 6.9 | (b) |
| Ce | | | | |
| Pr | | | | |
| Nd | | | | |
| Sm | | | 3.2 | (b) |
| Eu | | | 1 | (b) |
| Gd | | | | |
| Lu | | | 0.35 | (b) |
| Hf | | | | |

*technique: (a) e. probe, (b) prellim.*

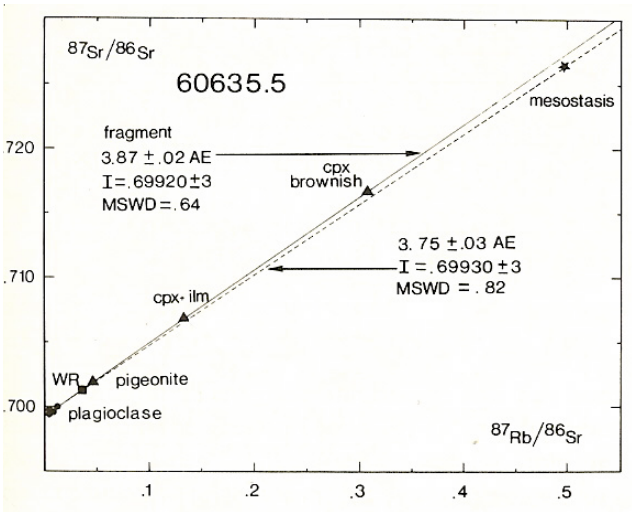


*Figure 5: Rb-Sr isochron for two parts of 60635 (Deutsch and Stoffler 1984).*

## Summary of Age Data for 60635

| | Rb/Sr |
|---|---|
| Deutsch and Stoffler 1987 | 3.87 ± 0.02 b.y. |
| | 3.75 ± 0.03 |

Caution: ($\ddot{e}^{87} = 1.42 \times 10^{-11}$ yr$^{-1}$)

**References for 60635**

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