LEAD ISOTOPIC STUDY OF GLASSES FROM THE D'ORBIGNY ANGRITE. R. Jotter[1], E. Jagoutz[1], M. E. Varela[2], R. Zartman[1] and G. Kurat[3], [1]Max-Planck-Institut fuer Chemie, Postfach 3060, D-55020 Mainz, Germany, e-mail: jotter@mpch-mainz.mpg.de, [2]CONICET-UNS, Dept. Geologia, San Juan 670, 8000 B. Blanca, Argentina, [3]Naturhistorisches Museum, Postfach 417, A-1014 Vienna, Austria.

Introduction: Angrites are mafic rocks which were formed very early in the history of the solar system [1]. The newly found angrite D'Orbigny [2] has attracted much attention worldwide. Several isotopic studies have been performed [3,4]. We obtained an U-Pb age of 4,557±1.5 Ma [5]. Here we present further results of our Pb/U isotopic study of its unusual glass phase [6].

Experimental: Four different glass samples of 5 to 20 mg were cleaned by leaching with diluted HCl: glass 1 and 2 with 0.5 n, glass 3 with 0.75 n and glass 4 with 0.02 n HCl for 16 min in an ultrasonic bath. Glasses 1 to 3 were spiked with a mixed 205Pb-235U-229Th spike. Our chemical separation procedure followed that of [5].

Results and Discussion: 1) U/Pb Isotopic Systematic: The Pb-Pb isotopic data of glasses 1 to 4, pyroxene and plagioclase are compiled in Table 1. The isotopic compositions of the glass samples differ strongly. We found both low and high radiogenic lead ratios. One possible explanation for the heterogeneity might be the high sensitivity of the glass grains against acid media. Therefore the Pb/U isotopic system could be affected by weathering. Much of radiogenic lead that possibly came from an older preexisting mineral would be lost in part. The measured (^{207}Pb/^{206}Pb)* ratio of glasses 1 and 2 is very high yielding an unrealistic high Pb-Pb age of ~4.7 Ga. We assume that the excess of ^{207}Pb probably originated from the decay of ^{247}Cm (now extinct) via excess ^{235}U [7].

2) Question of Formation: The D'Orbigny glass shows chondritic relative abundances of all refractory lithophile elements excluding a formation by partial melting. No shock features are present. The remarkable high ^{206}Pb/^{204}Pb ratio in two of our samples indicate that the plagioclase from D'Orbigny was not melted to form the glass. From our Pb-Pb ages of samples 1 and 2 the glass seems to be „older" than the rock. However, the glass clearly was added to the rock after ist formation, possibly by a fluid phase. This phase had chondritic relative abundances of refractory elements and contained an older isotopic component may be from a preexisting mineral.

TABLE. 1. Pb/Pb Isotopic Data of the D'Orbigny Angrite

Sample	206/204	207/204	208/204	(207/206)*	207/206 age [my]
Px	168.94	109.33	296.11	0.620414	4557±1.5
Glass 1	145.11	103.6	197.94	0.695955	(~4722)
Glass 2	826.73	569.6	1012.4	0.685572	(~4700)
Glass 3	21.56	20.61	52.52		
Glass 4	26.27	20.51	45.80		
Plag	18.13	15.56	37. 88	0.596586	(~4499)

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