



SEARCHING FOR TRACES OF EXTRATERRESTRIAL MATERIAL IN THE CHICXULUB IMPACTITES: RESULTS BASED ON PGE ANALYSIS

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The aim of our study was to characterize the Chicxulub impactor by means of analyzing PGE and siderophile elements of impactites from the Yax-1 (suevitic breccias [1]) and Yucatan 6 drill cores. The PGE concentrations were determined using ICP-MS in combination with nickel sulfide fire assay pre-concentrations after the method of [2]. The fire assay pre-concentration method provides reliable precision down to concentration of around 90 pg/g Ru, 20 pg/g Rh, 190 pg/g Pd, 60 pg/g Ir, 70 pg/g Pt and 130 pg/g Au and is thus ideal to detect even minute meteoritic contamination. The concentrations of Ir in most of the samples are extremely low, some even below the detection limit of the analytical method. Not only the low amount of PGE in the samples but also the element patterns for all the Chicxulub samples resemble the pattern of the continental crust [3]. There is no indication of any meteoritic contamination of the samples. A syn- and post-impact modification of the PGE pattern from meteoritic towards a continental crust pattern is very unlikely. On the other hand, the globally distributed fall out material at the K/T boundary has high PGE concentrations indicating that the Chicxulub impactor was most probably a C-chondritic asteroid and it is extremely implausible that the K/T boundary is not related to the Chicxulub impact. Taking the results of three-dimensional numerical simulations of the Chicxulub event into account we may draw the following conclusions: (1) The main fraction of the impactor is ejected far beyond the stratosphere

[4,5], distributed globally, and deposited in the K/T boundary clay. (2) The minor fraction of impactor could remain within the melt in the central basin of Chicxulub as indicated by the results from the C1 drill core [6]. (3) The impact melt deposited within the annular ring basin of Chicxulub at Yax-1 and Y6 is derived from a region of the ejecta plume which is not contaminated by impactor material in agreement with modeling results [4,5].

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