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Major and minor element systematics in enstatite chondrite metal and sulfides

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Enstatite (E-) chondrites have formed under highly reducing conditions and are therefore rich in metal and various sulfides, some of which are unique to E-chondrites [1]. Since the classification scheme [2] of petrologic types is not ideally applicable to E-chondrites, some research groups have used trends in mineral chemical compositions to constrain the degree of metamorphism [3]. In this study metal and sulfides in 23 samples of all petrologic types (3-6) in both E-chondrite subgroups (EH and EL) were analyzed by electron microprobe technique to obtain the minor and major element concentrations of these phases. Based on the large number of samples, the results of this study are more representative than those of former studies and enable to review, e.g., the former conclusion that the Cr- and Ti-contents in troilite are rising with increasing grade of metamorphism [3]. The earlier described trends in troilite cannot be confirmed based on this study.

[1] Larimer, J.W. & Buseck, P.R.. (1974) GCA 39, 471–477. [2] Van Schmus, W.R. & Wood, J.A. (1967) GCA 31, 747-765. [3] Zhang, Y. et al. (1995) JGR 100, 9417-9438

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