

e) Results

A detailed listing of the samples prepared for the MIR/MIM/QUELD programme is shown in Appendix V, of these 121 diffusion couple samples were prepared by Queen's University for its part of the liquid metal diffusion studies of the MIR/MIM/QUELD II mission. These samples were designed for liquid diffusion studies in 23 alloy systems of varying solvent-type, solute addition, sample size (1.5, 2.0, and 3.0 mm in diameter) and experimental conditions, e.g. temperature of exposure, and MIM condition (isolating, latched, or forcing).

However, of the samples prepared and shipped to MIR, only 63 provided data of sufficient quality to permit the derivation of accurate diffusion coefficients. Also, 11 more samples from Increment 2 were analyzed and the diffusion coefficients calculated but the results were found to be unsatisfactory due to only partial insertion of the sample. The others were deficient due to inadequate processing and/or specimen flaws. A major loss of samples occurred for those processed as part of Increment 2 of the MIR programme. Unfortunately, one of the sample mounting arms became bent so that only 11 of the 37 samples were fully inserted into the furnace and so could be processed as desired. In order to determine which samples had been