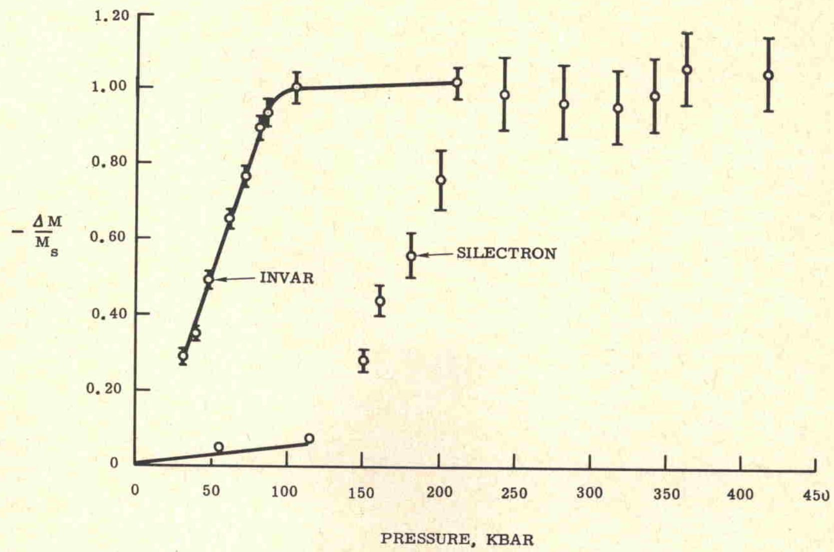

FIG. 2. Relative magnetization change of Invar and Silectron at various pressures. The data on Invar indicate that below 30 kbar the response is influenced by the elastic limit of the material and the laminated construction of the sample.

wave becomes equal to that of the first, a single shock wave is formed, and the entire sample is demagnetized. Thus, the peak currents observed between 150 and 375 kbar are influenced by various nonuniform pressure distributions in the *samples* as well as various magnetization changes of the *material*. In this case, the peak currents predicted from Eq. (1) are incorrect. With some reduced accuracy, however, we can measure values of di/dt from the current–time waveforms for times before the wave reflection occurs. These values are proportional to the product of the magnetization change and the velocity of the higher-pressure wave. The magnetization change shown in Fig. 2 is computed from these di/dt values and the wave velocity as obtained from the previous shock-compression experiments.[9] Again, the higher-pressure di/dt values are used as the reference to which all the lower-pressure points are normalized.

These data show that when a pressure of 225 kbar is exceeded the material is completely demagnetized; hence, the high-pressure phase is nonferromagnetic. This observation agrees with static high-pressure Mössbauer effect measurements[11] on iron. The region between 150 and 225 kbar is the mixed-phase region[12] which is characteristic of the thermodynamic conditions of a shock-compression experiment.

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