# Pictures to: 4. IBM T.J. Watson Research Center

# 4.1 TEM of Silicon - Silicide Interfaces Publication 25

What follows are the pictures to publication 25 (Cross-sectional TEM of silicon-silicide interfaces).

One of the pictures (Flg. 2 in the paper) shows the very first high-resolution image of a heterogeneousa interface.



#### Fig. 1 In Publication 1

What you see going from th from bottom of the picture to the to top: Si; nothing (because of denomination),  $Pd_2Si$  (structuress since very likely epitaxial to the Si) and unreacted Pd The picture demonstrates the problems of cross-sectional TEM with heterogeneous

samples. Many reasons for stress lead to bending and in thise case even to delamination of the Pd2Si / Pd layer from the Si substrate.

FIG. 1. Thin layer of Pd<sub>2</sub> Si and Pd on Si. The layer is severely bent (comingout of the paper plane in the left-hand corner).



**Fig. 2 In Publication 1. Epitaxial Pd<sub>2</sub>Si (top) on Si (bottom)** My most treasured picture. It is the very first HRTEM of a heterogeneous interface ever taken. Wasn't easy then.

Fig. 2. Lattice image of the Pd2 Si-Si interface. The spacing oft he Si {111}fnnges . (e.g. parallel to the interface) is 0.31 nm. A Burgers-like circuit isdrawn in, showmg 79 Pd2 Si {22-40} fringes for 75 Si {111} fringes



Auxiliary picture to Fig. 2 In Publication 1 Showing that ther eis morre than one picture and a "large" pseudo Burgers circuit. The "cut" results from glueing two pictrues together.



### Auxiliary picture to Fig. 2 In Publication 1

Just for showing details. The bright spot on the lower right is simply light emitted by the hot cathode way up in there in the microscope column. You only get that way down on the screen fior a perfectly aligned microscope.











## Fig. 8 In Publication 1.

A picture that proves my original point: Even in the author's print of the journal article you can't see anything in Fig. 8

Forghget copies and scans.

FIG. 8. Lattice image of the Si-NiSi2 interface on a {111} plane. The NiSi2 istwinned with respect to the Si matrix; this also can be seen from the typicaltwin-diffraction pattern. The interface contains a dislocation at the darkspot.



FIG. 9. Misfit dislocations in the interface between NiSi2 and {1111} Si.





