

## Supplemental Data:

A second high pressure data set was collected using a single crystal of aragonite from the same locality, and with the same experimental setup, but the pressure transmitting medium was He. These data confirm the lattice behavior observed in the original experiment using a different pressure medium.

Data collected:

$P_{\text{Avg}}$ (GPa)	$a$ (Å)	$b$ (Å)	$c$ (Å)	$v$ (Å <sup>3</sup> )
1.42	5.68	7.92	4.94	222.36
6.24	5.53	7.79	4.89	210.96
13.47	5.35	7.66	4.82	197.50
17.35	5.26	7.60	4.79	191.47
23.04	5.17	7.54	4.75	185.13
28.25	5.08	7.52	4.71	179.94
31.44	5.02	7.52	4.69	177.00
34.41	4.96	7.53	4.67	174.49
37.64	4.89	7.55	4.66	171.97

Figure 2 with added data from the second high pressure experiment:

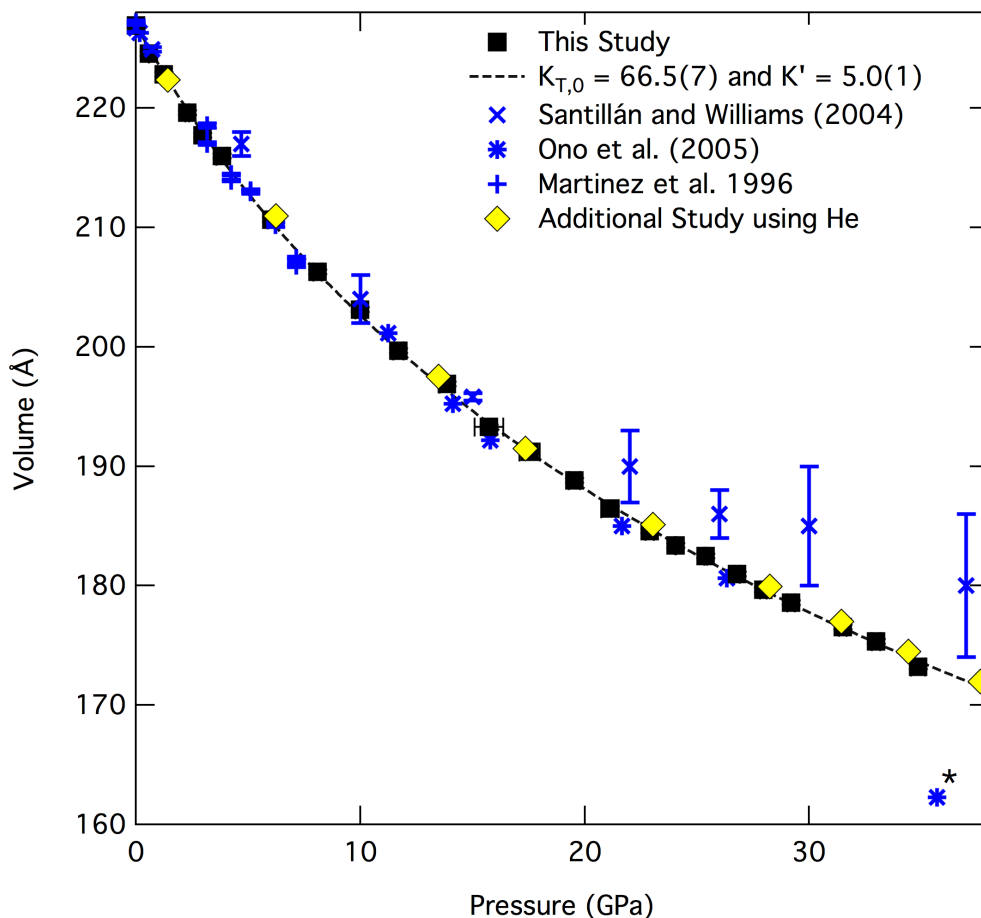


Figure 3 with added data from the second high pressure experiment:

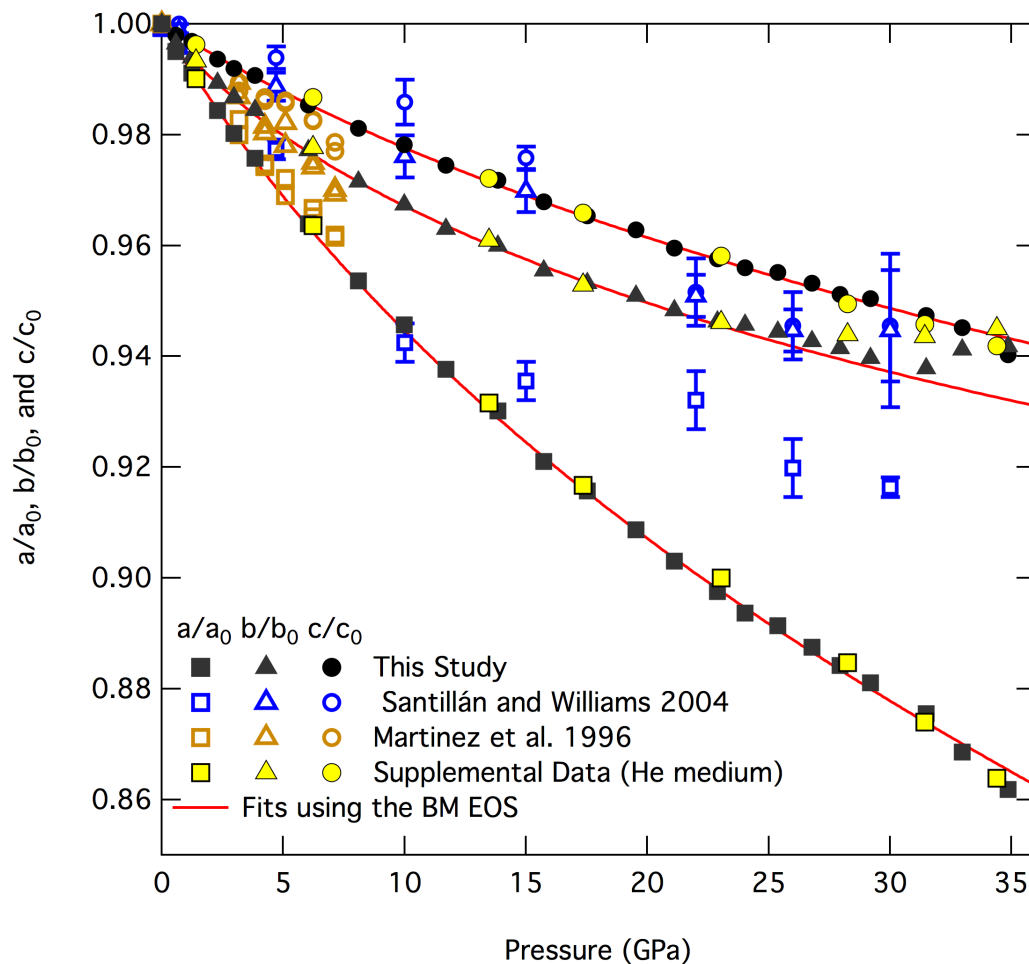
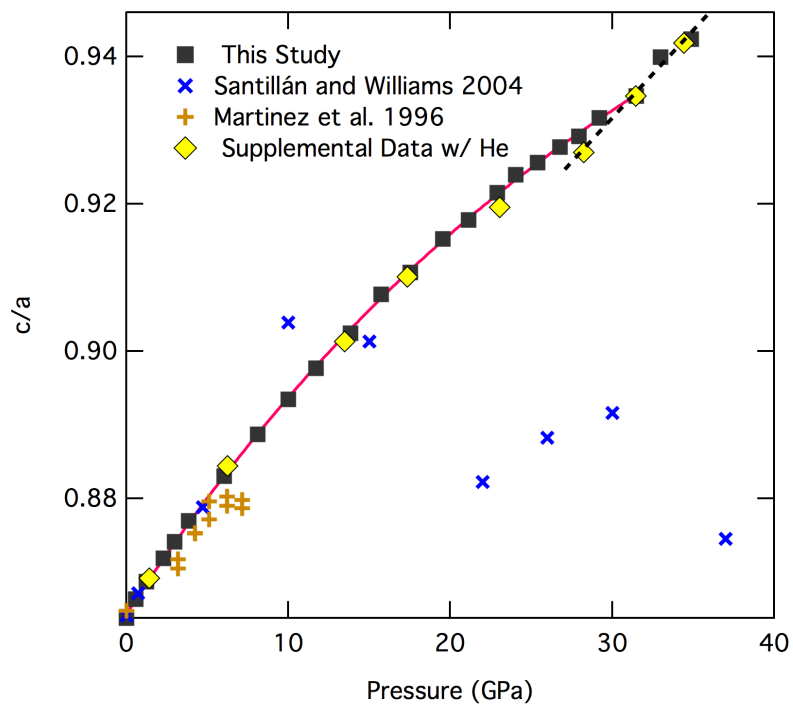
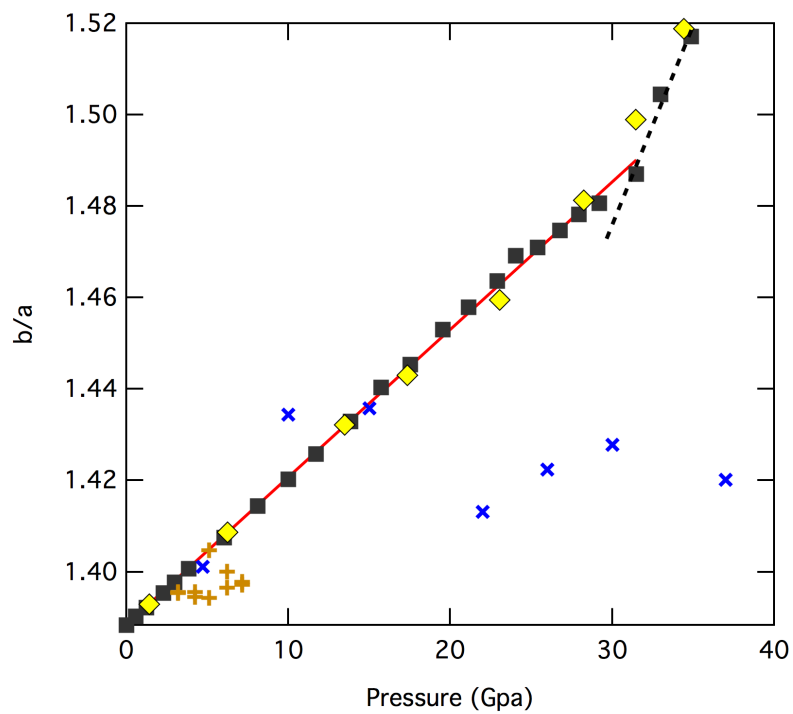


Figure 4 with added data from the second high pressure experiment:  
A.



B.



C.

