

Supporting information for

Effective Bandgap Engineering in Wrinkled Germanane via Tiny Electric Field

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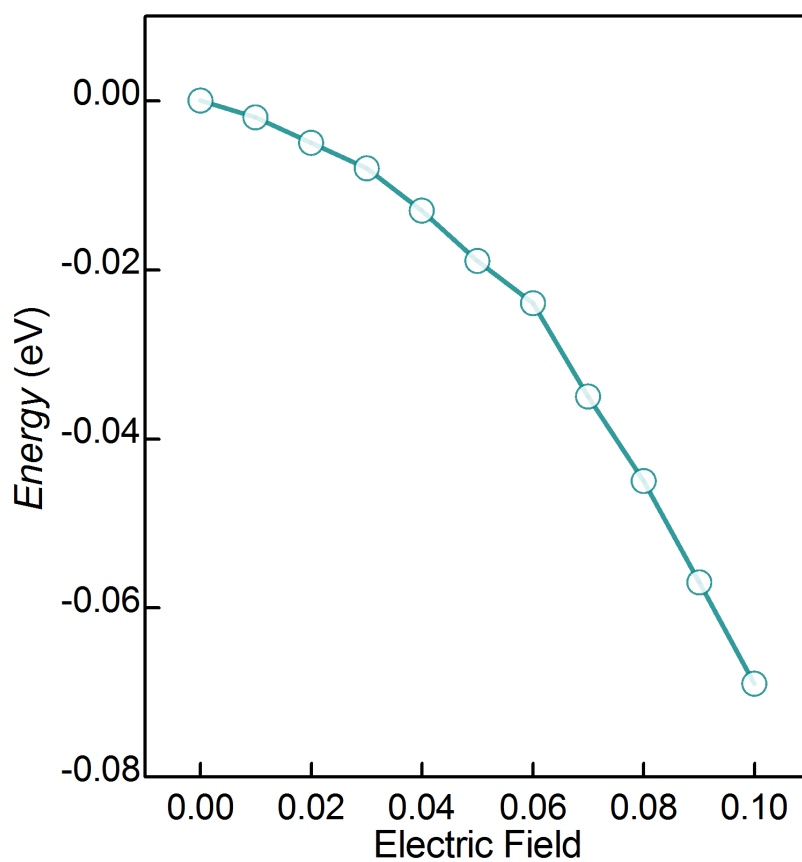


Figure 1S. The energy difference between the wrinkled germanane with and without E-field as a function of applied E-field

Structural and energy information of wrinkled germanane

H	Ge		
1.0			
92.26578999999996		0.000000000000000	0.000000000000000
0.000000000000000		3.985920000000000	0.000000000000000
0.000000000000000		0.000000000000000	44.000000000000000
60	60		
Direct			
0.7553100000000003		0.000000000000000	0.183120000000000
0.782579999999999		0.000000000000000	0.267190000000000
0.8250200000000002		0.000000000000000	0.164580000000000
0.8603500000000002		0.000000000000000	0.234150000000000
0.891130000000000		0.000000000000000	0.114620000000000
0.9326400000000003		0.000000000000000	0.167070000000000
0.950260000000000		0.000000000000000	0.036950000000000
0.9962700000000002		0.000000000000000	0.068520000000000
0.7032900000000001		0.000000000000000	0.264180000000000
0.6852400000000001		0.000000000000000	0.169770000000000
0.6261600000000001		0.000000000000000	0.225650000000000
0.6183500000000001		0.000000000000000	0.125250000000000
0.5550400000000002		0.000000000000000	0.153260000000000
0.5578000000000001		0.000000000000000	0.051760000000000
0.506330000000000		0.000000000000000	0.9509600000000001
0.2446900000000001		0.000000000000000	0.8168800000000001
0.2174200000000001		0.000000000000000	0.7328100000000002
0.174980000000000		0.000000000000000	0.8354200000000002
0.139650000000000		0.000000000000000	0.765850000000000
0.108870000000000		0.000000000000000	0.885379999999999
0.067360000000000		0.000000000000000	0.8329300000000001
0.049740000000000		0.000000000000000	0.9630500000000001
0.003730000000000		0.000000000000000	0.9314800000000001
0.296710000000000		0.000000000000000	0.7358200000000003
0.314760000000000		0.000000000000000	0.8302300000000001
0.3738400000000001		0.000000000000000	0.774350000000000
0.381650000000000		0.000000000000000	0.8747500000000001
0.4449600000000001		0.000000000000000	0.8467400000000002
0.4422000000000001		0.000000000000000	0.9482400000000001
0.493670000000000		0.000000000000000	0.049040000000000
0.7428800000000002		0.500000000000000	0.270260000000000

0.7904900000000000	0.5000000000000000	0.1777500000000000
0.8218500000000001	0.5000000000000000	0.2552800000000000
0.8587500000000001	0.5000000000000000	0.1432400000000000
0.8973700000000000	0.5000000000000000	0.2046400000000000
0.9219300000000001	0.5000000000000000	0.0789100000000000
0.9657900000000000	0.5000000000000000	0.1219200000000000
0.9765500000000001	0.5000000000000000	0.9874099999999999
0.7201700000000001	0.5000000000000000	0.1803600000000000
0.6641900000000003	0.5000000000000000	0.2493000000000000
0.6511600000000001	0.5000000000000000	0.1513100000000000
0.5896000000000001	0.5000000000000000	0.1933500000000000
0.5870500000000001	0.5000000000000000	0.0918100000000000
0.5224500000000001	0.5000000000000000	0.1044800000000000
0.4684100000000001	0.5000000000000000	0.9953000000000000
0.2571200000000000	0.5000000000000000	0.7297400000000002
0.2095100000000001	0.5000000000000000	0.8222500000000000
0.1781500000000000	0.5000000000000000	0.7447200000000002
0.1412500000000000	0.5000000000000000	0.8567600000000001
0.1026300000000000	0.5000000000000000	0.7953600000000001
0.0780700000000000	0.5000000000000000	0.9210900000000001
0.0342100000000000	0.5000000000000000	0.8780800000000002
0.0234500000000000	0.5000000000000000	0.0125900000000000
0.2798300000000000	0.5000000000000000	0.8196400000000003
0.3358100000000002	0.5000000000000000	0.7507000000000001
0.3488400000000000	0.5000000000000000	0.8486900000000002
0.4104000000000000	0.5000000000000000	0.8066500000000001
0.4129500000000000	0.5000000000000000	0.9081900000000001
0.4775500000000000	0.5000000000000000	0.8955200000000000
0.5315900000000000	0.5000000000000000	0.0047000000000000
0.5481100000000001	0.0000000000000000	0.0806000000000000
0.5642200000000001	0.0000000000000000	0.1237400000000000
0.6118900000000002	0.0000000000000000	0.1578300000000000
0.6822700000000000	0.0000000000000000	0.2045000000000000
0.6321100000000001	0.0000000000000000	0.1926900000000000
0.7056500000000001	0.0000000000000000	0.2292800000000000
0.7559200000000002	0.0000000000000000	0.2183800000000001
0.8292500000000000	0.0000000000000000	0.1987300000000000
0.7813000000000002	0.0000000000000000	0.2320600000000000
0.8554200000000002	0.0000000000000000	0.2004700000000000
0.8986800000000003	0.0000000000000000	0.1461500000000000
0.9609599999999999	0.0000000000000000	0.0641600000000000
0.9244100000000000	0.0000000000000000	0.1363600000000000
0.9849400000000002	0.0000000000000000	0.0425100000000000
0.4942400000000000	0.0000000000000000	0.9754499999999999

0.4518900000000000	0.0000000000000000	0.9194000000000001
0.4357800000000001	0.0000000000000000	0.8762600000000002
0.3881100000000001	0.0000000000000000	0.8421700000000001
0.3177300000000000	0.0000000000000000	0.7955000000000001
0.3678900000000001	0.0000000000000000	0.8073100000000000
0.2943500000000001	0.0000000000000000	0.7707200000000001
0.2440800000000001	0.0000000000000000	0.7816200000000001
0.1707500000000000	0.0000000000000000	0.8012700000000002
0.2187000000000000	0.0000000000000000	0.7679400000000001
0.1445800000000000	0.0000000000000000	0.7995300000000000
0.1013200000000000	0.0000000000000000	0.8538600000000000
0.0390400000000000	0.0000000000000000	0.9358400000000002
0.0755900000000000	0.0000000000000000	0.8636400000000002
0.0150600000000000	0.0000000000000000	0.9574900000000002
0.5057600000000000	0.0000000000000000	0.0245500000000000
0.5789700000000002	0.5000000000000000	0.1227600000000000
0.5334300000000001	0.5000000000000000	0.0778200000000000
0.5972599999999999	0.5000000000000000	0.1619800000000000
0.6464500000000001	0.5000000000000000	0.1851900000000000
0.7189300000000003	0.5000000000000000	0.2155500000000001
0.6683800000000001	0.5000000000000000	0.2151700000000000
0.7434300000000000	0.5000000000000000	0.2350400000000000
0.7928700000000001	0.5000000000000000	0.2126800000000000
0.8646600000000003	0.5000000000000000	0.1762700000000000
0.8187800000000002	0.5000000000000000	0.2206400000000000
0.8907600000000002	0.5000000000000000	0.1722600000000000
0.9309500000000002	0.5000000000000000	0.1086700000000000
0.9883800000000000	0.5000000000000000	0.0124700000000000
0.9560200000000002	0.5000000000000000	0.0932500000000000
0.4798000000000002	0.5000000000000000	0.9693599999999999
0.4210300000000001	0.5000000000000000	0.8772400000000001
0.4665700000000000	0.5000000000000000	0.9221800000000000
0.4027400000000000	0.5000000000000000	0.8380200000000001
0.3535500000000000	0.5000000000000000	0.8148100000000002
0.2810700000000000	0.5000000000000000	0.7844500000000000
0.3316200000000001	0.5000000000000000	0.7848300000000000
0.2565700000000000	0.5000000000000000	0.7649600000000000
0.2071300000000000	0.5000000000000000	0.7873200000000000
0.1353400000000000	0.5000000000000000	0.8237300000000001
0.1812200000000000	0.5000000000000000	0.7793600000000001
0.1092400000000000	0.5000000000000000	0.8277400000000003
0.0690500000000000	0.5000000000000000	0.8913300000000000
0.0116200000000000	0.5000000000000000	0.9875299999999999
0.0439800000000000	0.5000000000000000	0.9067500000000002

0.5202000000000001

0.5000000000000000

0.0306400000000000