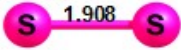
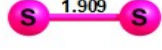
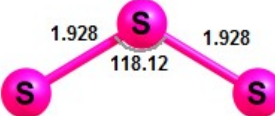
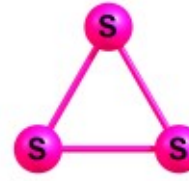
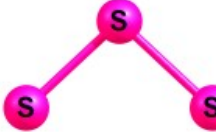

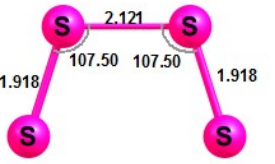
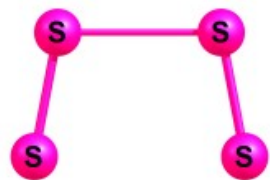


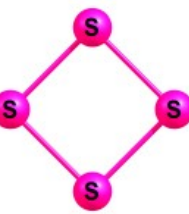
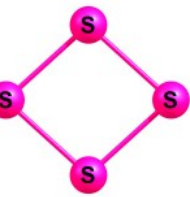
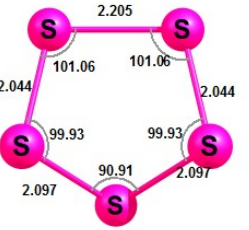
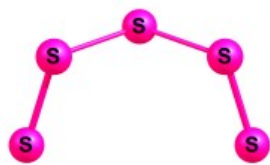
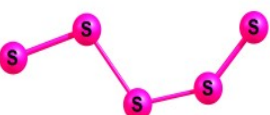
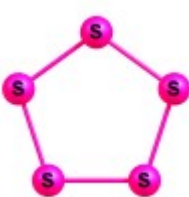
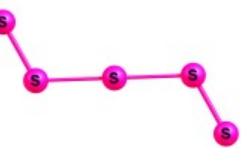
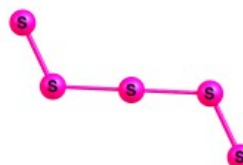
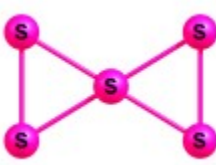
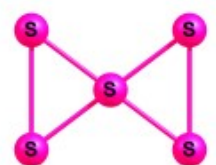
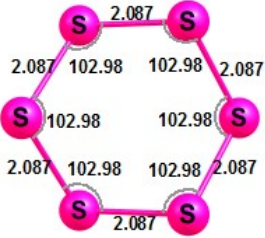
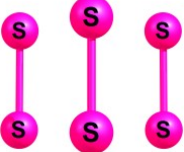
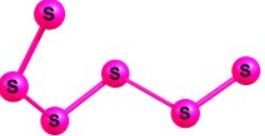
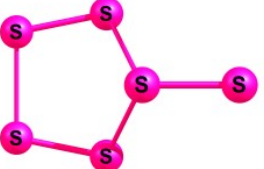
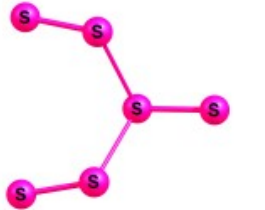
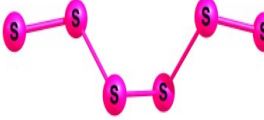
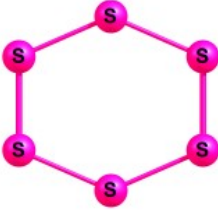
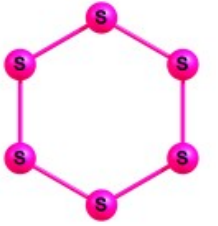
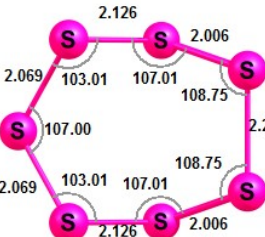
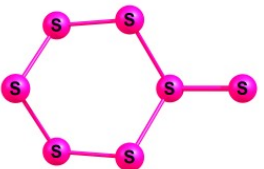

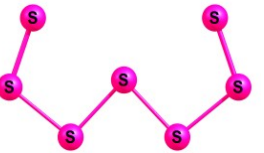
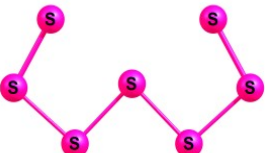
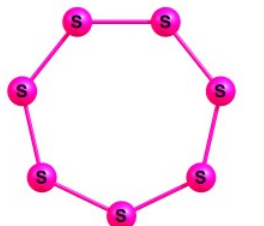
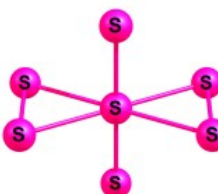
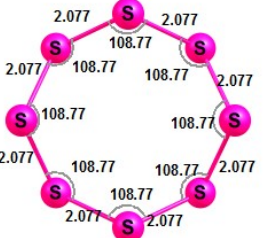
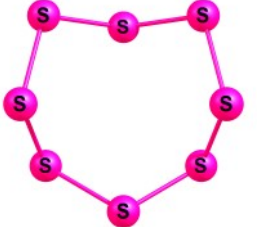
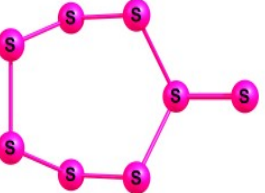
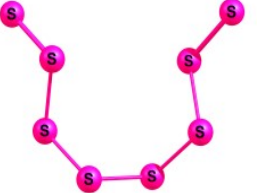

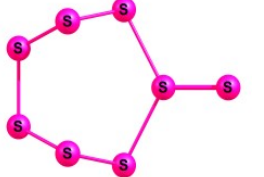









Table S1: Optimized lower/low energy isomers of  $S_n$  at the B3LYP method with the total energy (a.u) and the relative energy difference between the adjacent isomers (eV).

 <p><math>\Delta=0.000</math>; <math>D_{\infty h}</math>; <math>M=3</math> <math>E = -798.6265042130</math></p>	 <p><math>\Delta=0.978</math>; <math>D_{\infty h}</math>; <math>M=1</math> <math>E = -798.5905474904</math></p>						
 <p><math>\Delta=0.000</math>; <math>C_{2v}</math>; <math>M=1</math> <math>E = -1197.9459740390</math></p>	 <p><math>\Delta=0.343</math>; <math>D_{3h}</math>; <math>M=1</math> <math>E = -1197.9333781446</math></p>	 <p><math>\Delta=0.379</math>; <math>C_{2v}</math>; <math>M=3</math> <math>E = -1197.9194344297</math></p>	 <p><math>\Delta=0.310</math>; <math>C_{2v}</math>; <math>M=3</math> <math>E = -1197.9080242152</math></p>				
 <p><math>\Delta=0.000</math>; <math>C_{2v}</math>; <math>M=1</math> <math>E = -1597.2731961853</math></p>	 <p><math>\Delta=0.186</math>; <math>C_{2v}</math>; <math>M=3</math> <math>E = -1597.2663524520</math></p>	 <p><math>\Delta=0.070</math>; <math>C_{2h}</math>; <math>M=3</math> <math>E = -1597.26379520</math></p>	 <p><math>\Delta=0.032</math>; <math>C_{2h}</math>; <math>M=1</math> <math>E = -1597.2625993503</math></p>	 <p><math>\Delta=0.798</math>; <math>D_{4h}</math>; <math>M=1</math> <math>E = -1597.2332537899</math></p>	 <p><math>\Delta=0.191</math> <math>D_{2h}</math>; <math>M=3</math> <math>E = -1597.2262423565</math></p>		
 <p><math>\Delta=0.000</math>; <math>C_s</math>; <math>M=1</math> <math>E = -1996.6120966839</math></p>	 <p><math>\Delta=0.636</math>; <math>C_s</math>; <math>M=3</math> <math>E = -1996.5887088084</math></p>	 <p><math>\Delta=0.035</math>; <math>C_s</math>; <math>M=3</math> <math>E = -1996.5874261138</math></p>	 <p><math>\Delta=0.888</math>; <math>D_{5h}</math>; <math>M=1</math> <math>E = -1996.5547976417</math></p>	 <p><math>\Delta=0.273</math>; <math>S_2</math>; <math>M=3</math> <math>E = -1996.5447584903</math></p>	 <p><math>\Delta=0.191</math>; <math>S_2</math>; <math>M=1</math> <math>E = -1996.5377193256</math></p>	 <p><math>\Delta=2.607</math>; <math>D_{2h}</math>; <math>M=1</math> <math>E = -1996.4419226917</math></p>	 <p><math>\Delta=0.748</math>; <math>D_{2h}</math>; <math>M=3</math> <math>E = -1996.4144291259</math></p>

 <p><math>\Delta=0.000</math>; <math>D_3</math>; <math>M=1</math>  <math>E = -2395.9546151953</math></p>	 <p><math>\Delta=0.726</math>; <math>C_s</math>; <math>M=1</math>  <math>E = -2395.9279433016</math></p>	 <p><math>\Delta=0.231</math>; <math>C_s</math>; <math>M=3</math>  <math>E = -2395.9194362792</math></p>	 <p><math>\Delta=0.155</math>; <math>C_s</math>; <math>M=1</math>  <math>E = -2395.9137465697</math></p>	 <p><math>\Delta=0.569</math>; <math>C_s</math>; <math>M=3</math>  <math>E = -2395.8928318869</math></p>	 <p><math>\Delta=0.025</math>; <math>C_2</math>; <math>M=1</math>  <math>E = -2395.8919256164</math></p>	 <p><math>\Delta=1.005</math>; <math>D_{2h}</math>; <math>M=3</math>  <math>E = -2395.8550000034</math></p>	 <p><math>\Delta=0.517</math>; <math>D_{6h}</math>; <math>M=1</math>  <math>E = -2395.8360154235</math></p>
 <p><math>\Delta=0.000</math>; <math>C_s</math>; <math>M=1</math>  <math>E = -2795.2845812095</math></p>	 <p><math>\Delta=0.837</math>; <math>C_s</math>; <math>M=1</math>  <math>E = -2795.2538193051</math></p>	 <p><math>\Delta=0.256</math>; <math>C_s</math>; <math>M=3</math>  <math>E = -2795.2444238888</math></p>	 <p><math>\Delta=0.717</math>; <math>C_2</math>; <math>M=3</math>  <math>E = -2795.2180756938</math></p>	 <p><math>\Delta=0.396</math>; <math>C_2</math>; <math>M=1</math>  <math>E = -2795.2035345815</math></p>	 <p><math>\Delta=2.899</math>; <math>D_{7h}</math>; <math>M=1</math>  <math>E = -2795.0969897967</math></p>	 <p><math>\Delta=2.274</math>; <math>D_{2h}</math>; <math>M=1</math>  <math>E = -2795.0134044245</math></p>	
 <p><math>\Delta=0.000</math>; <math>D_{4d}</math>; <math>M=1</math>  <math>E = -3194.6246531083</math></p>	 <p><math>\Delta=0.484</math>; <math>C_s</math>; <math>M=1</math>  <math>E = -3194.6068623106</math></p>	 <p><math>\Delta=0.801</math>; <math>C_s</math>; <math>M=1</math>  <math>E = -3194.5774178919</math></p>	 <p><math>\Delta=0.128</math>; <math>C_2</math>; <math>M=3</math>  <math>E = -3194.5727057684</math></p>	 <p><math>\Delta=0.291</math>; <math>C_2</math>; <math>M=1</math>  <math>E = -3194.5620024964</math></p>	 <p><math>\Delta=0.560</math>; <math>C_s</math>; <math>M=3</math>  <math>E = -3194.5414145380</math></p>		

**Table S2: Vibrational Frequency of  $S_{n=2-8}$  clusters at the B3LYP method.**

$S_{n=2-8}$							
<b>Frequency (<math>\text{cm}^{-1}</math>)</b>	716	260, 595, 683	108, 208, 330, 372, 648, 674	85, 231, 284, 318, 334, 417, 425, 502, 515	<i>i</i> 23, 160, 161, 262, 271,312 348, 437, 444, 456, 457, 476	58, 125, 155, 167, 193 233, 266, 289, 336, 367, 376, 448, 478, 516, 524	<i>i</i> 411, <i>i</i> 406, 190, 190, 213, 241,247, 247, 384, 399, 404, 412, 412, 464, 464, 471, 491, 494,