

SUPPORTING INFORMATION

Green solution synthesis of $\text{Bi}_{19}\text{S}_{27}\text{I}_3$ nanoparticles - engineering morphology through polyethylene glycol and photocatalytic activity of Cr^{6+}

Maia Mombrú Frutos, Martina Viera, Carolina Grosso, Mauricio Rodríguez Chialanza, Laura Fornaro, María Eugenia Pérez Barthaburu, Ivana Aguiar

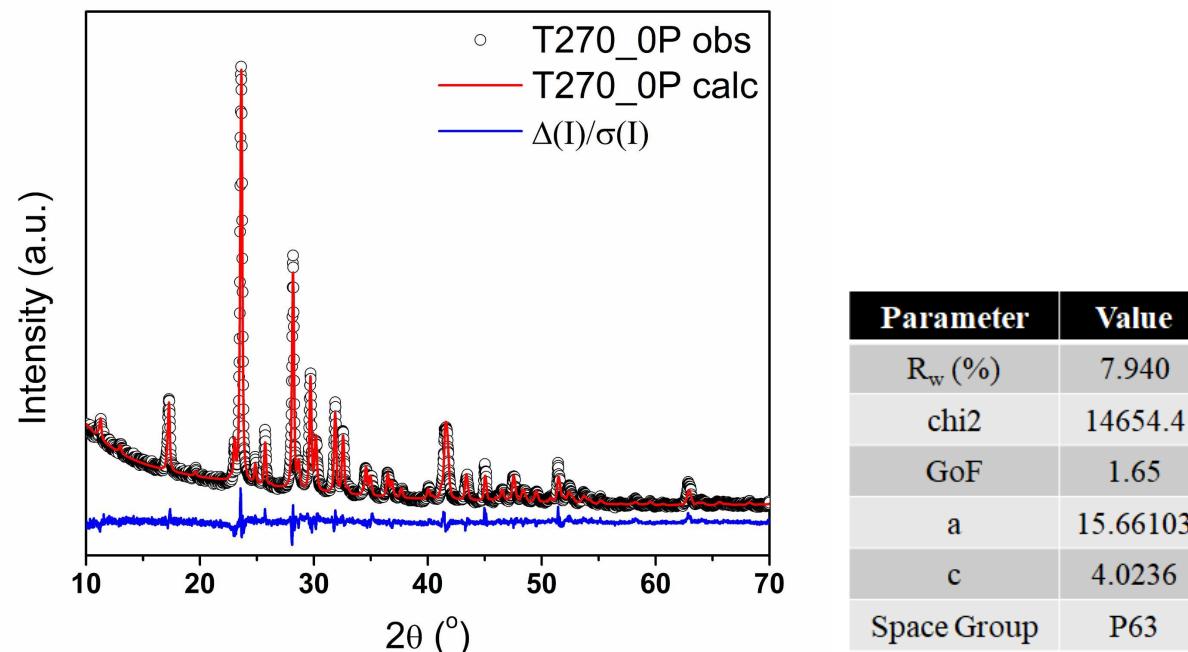


Figure S1. Rietveld refinement of sample T270_P0 using GSAS-II software. Annex table summarizes the refinement parameters and the unit cell values.

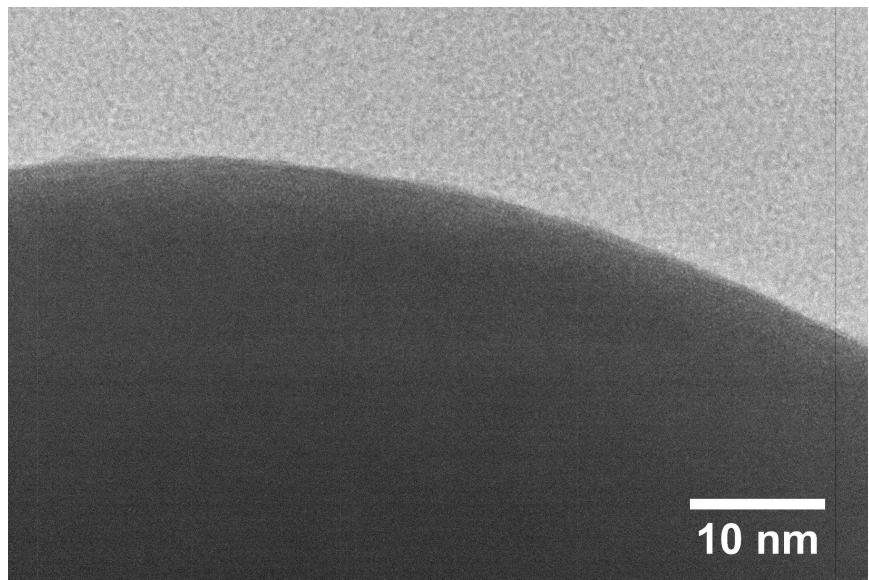


Figure S2. TEM image of edge of round nanoparticle of Bi₁₉S₂₇I₃.

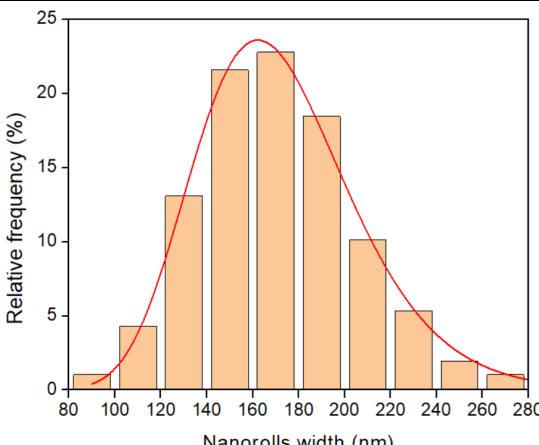
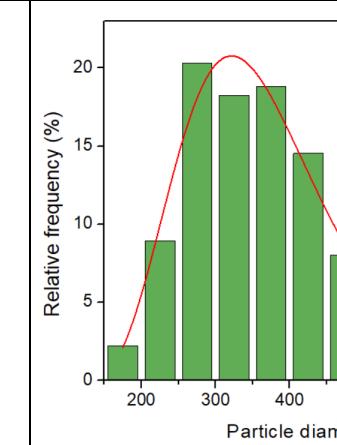
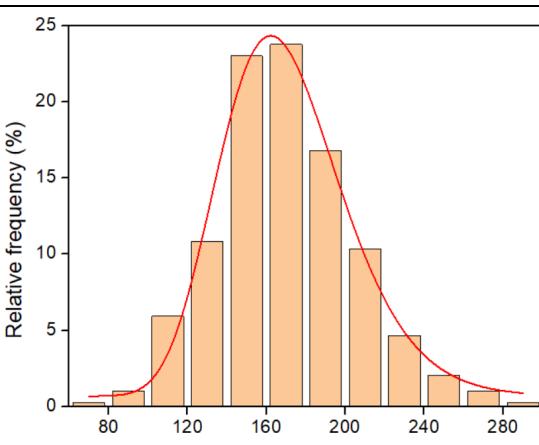
Table S1. Median and sigma values of measurements of nanostructures sizes:

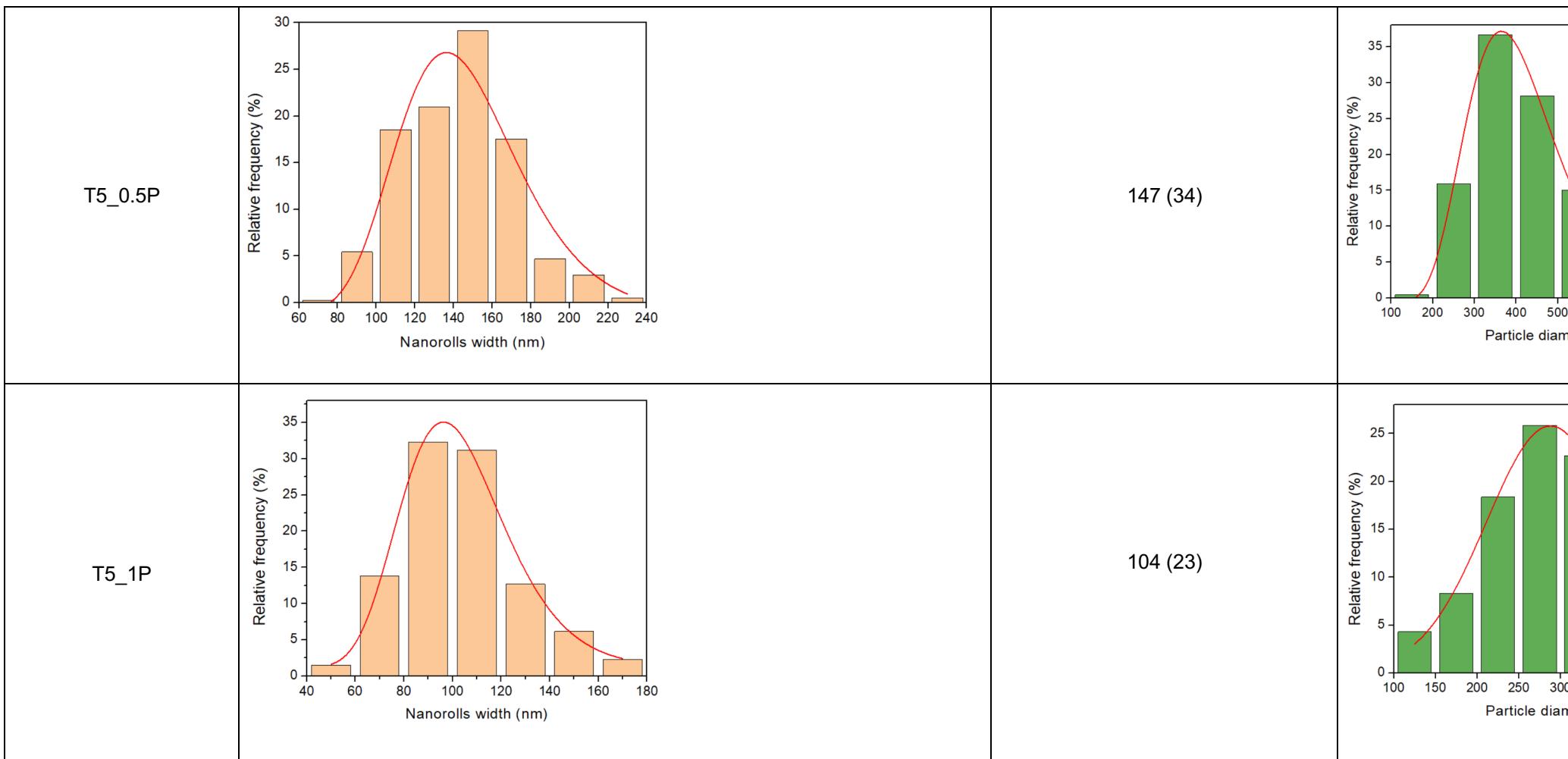
			Nanorolls			Round nanoparticles		
Sample	time (min)	PEG:Bi	Median	Sigma	% error	Median	Sigma	% error
T5_I	5	-	173	35	21	368	113	31
T270_I	270	-	186	38	20	N/A	N/A	N/A

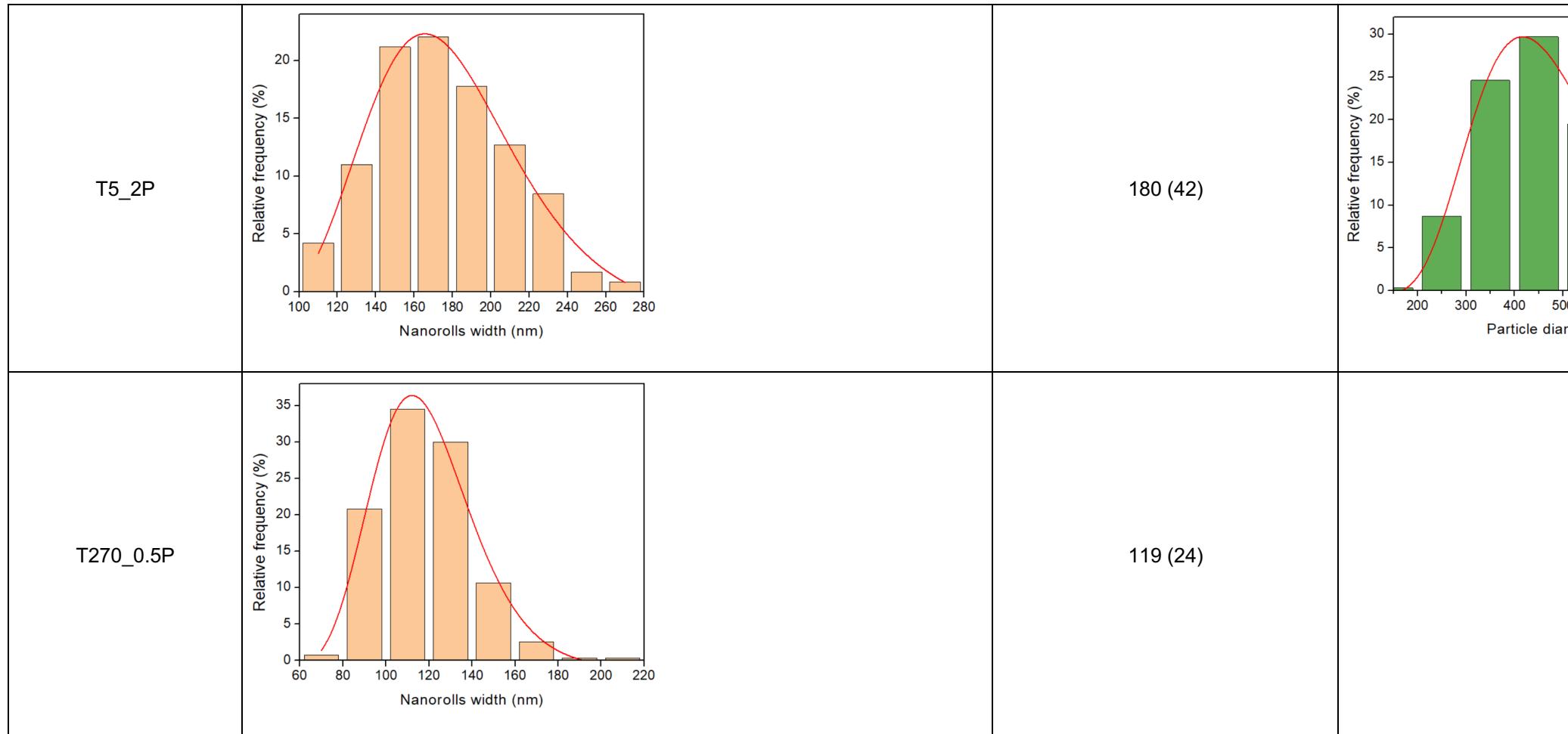
T5_I_0.5P	5	0.5:1	147	34	23	414	123	30
T5_I_1P	5	1:1	103	23	21	300	76	24
T5_I_2P	5	2:1	180	42	24	485	159	34
T270_I_0.5P	270	0.5:1	119	24	20	N/A	N/A	N/A
T270_I_1P	270	1:1	148	30	21	N/A	N/A	N/A
T270_I_2P	270	2:1	130	36	28	242	130	54

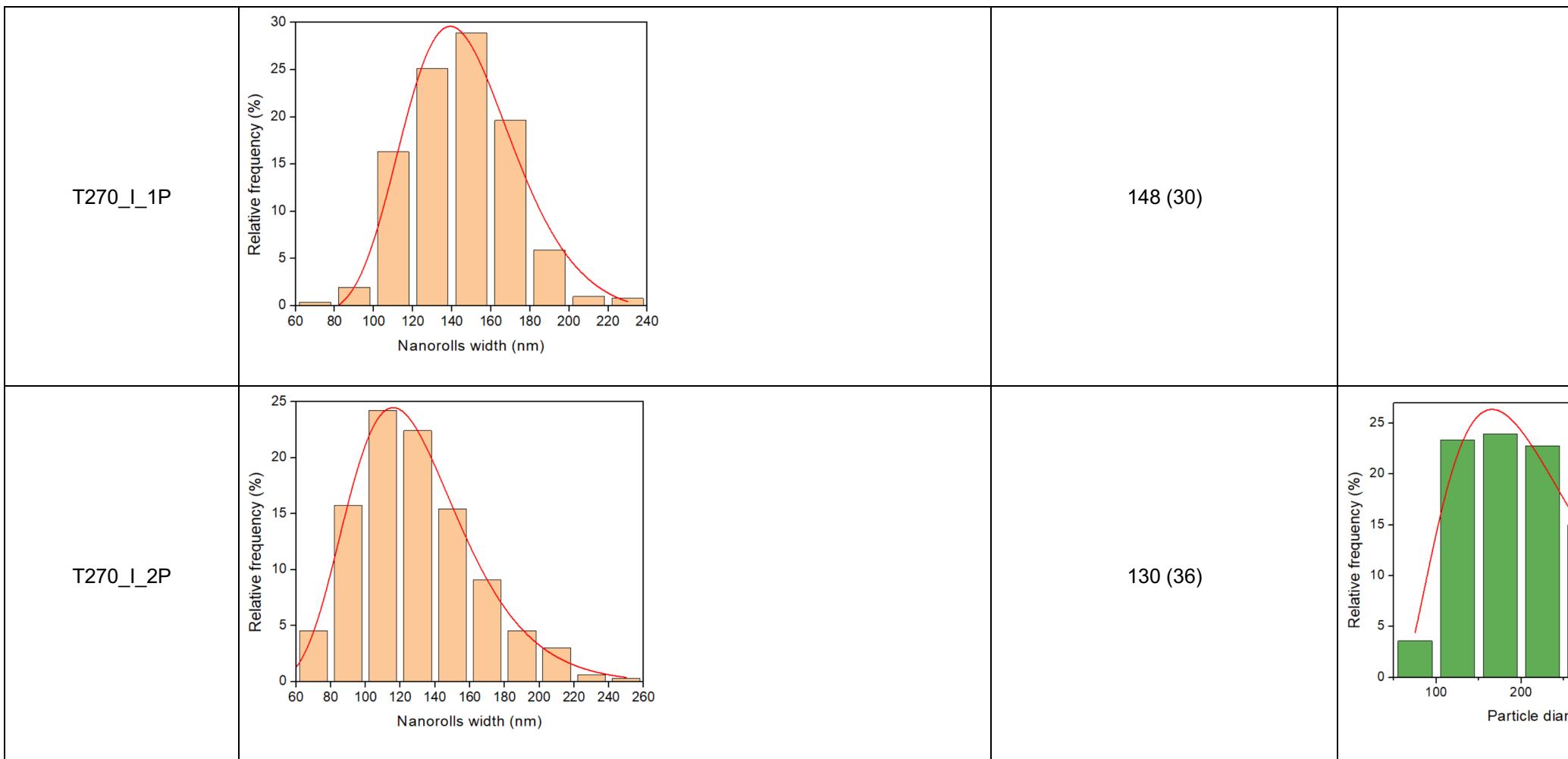
The distribution function used to fit all histograms is LogNormal.

Table S2. Histograms and corresponding LogNormal fitted function for all samples measurements of nanorolls and round nanoparticles:

Sample	Histogram nanorolls	Nanorolls median (sigma)	Histogram																																										
T5_0P	 <p>Relative frequency (%) vs Nanorolls width (nm) for sample T5_0P. The histogram shows a distribution centered around 160 nm with a red LogNormal fitted curve.</p> <table border="1"> <caption>Data for T5_0P Nanorolls Histogram</caption> <thead> <tr> <th>Nanorolls width (nm)</th> <th>Relative frequency (%)</th> </tr> </thead> <tbody> <tr><td>90</td><td>1</td></tr> <tr><td>100</td><td>4</td></tr> <tr><td>110</td><td>13</td></tr> <tr><td>120</td><td>21</td></tr> <tr><td>130</td><td>22</td></tr> <tr><td>140</td><td>23</td></tr> <tr><td>150</td><td>22</td></tr> <tr><td>160</td><td>23</td></tr> <tr><td>170</td><td>18</td></tr> <tr><td>180</td><td>10</td></tr> <tr><td>190</td><td>5</td></tr> <tr><td>200</td><td>2</td></tr> <tr><td>210</td><td>1</td></tr> </tbody> </table>	Nanorolls width (nm)	Relative frequency (%)	90	1	100	4	110	13	120	21	130	22	140	23	150	22	160	23	170	18	180	10	190	5	200	2	210	1	173 (35)	 <p>Relative frequency (%) vs Particle dian for sample T5_0P. The histogram shows a distribution centered around 300 nm with a red LogNormal fitted curve.</p> <table border="1"> <caption>Data for T5_0P Particle diameter Histogram</caption> <thead> <tr> <th>Particle dian</th> <th>Relative frequency (%)</th> </tr> </thead> <tbody> <tr><td>200</td><td>2</td></tr> <tr><td>250</td><td>9</td></tr> <tr><td>300</td><td>20</td></tr> <tr><td>350</td><td>18</td></tr> <tr><td>400</td><td>15</td></tr> <tr><td>450</td><td>8</td></tr> </tbody> </table>	Particle dian	Relative frequency (%)	200	2	250	9	300	20	350	18	400	15	450	8
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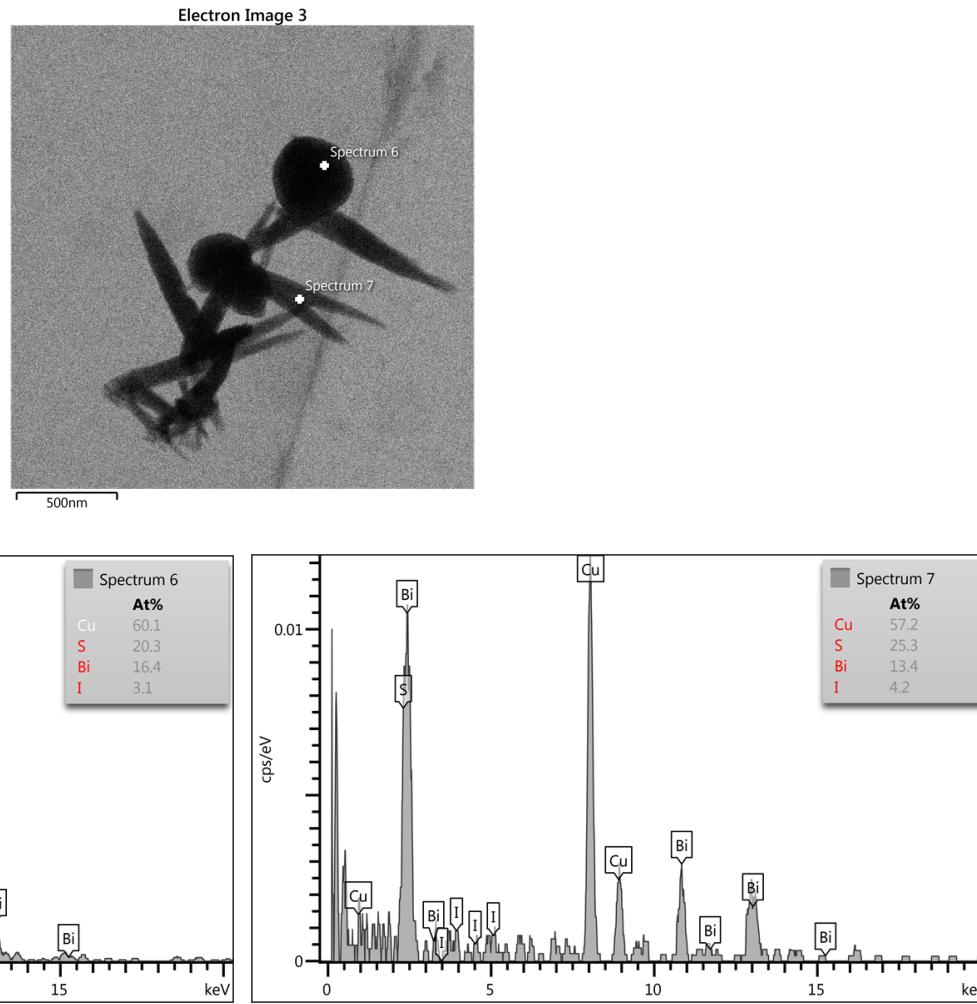


Figure S3. STEM image of nanorolls and nanoparticles and EDS spectra of selected points (Spectrum 6 for round nanoparticle, Spectrum 7 for nanoroll).

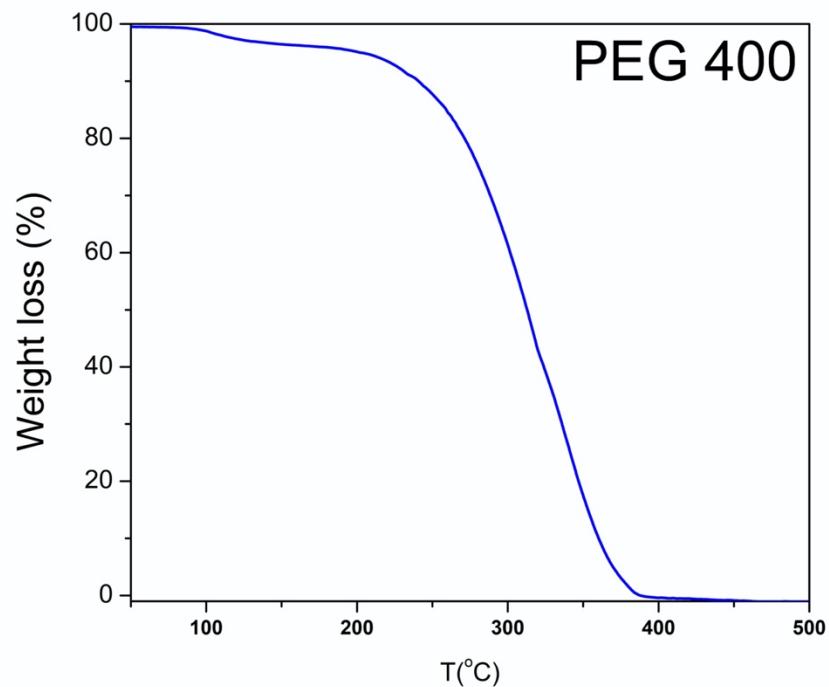


Figure S4. TGA of PEG 400 used in the syntheses of $\text{Bi}_{19}\text{S}_{27}\text{I}_3$.