SUPPORTING INFORMATION
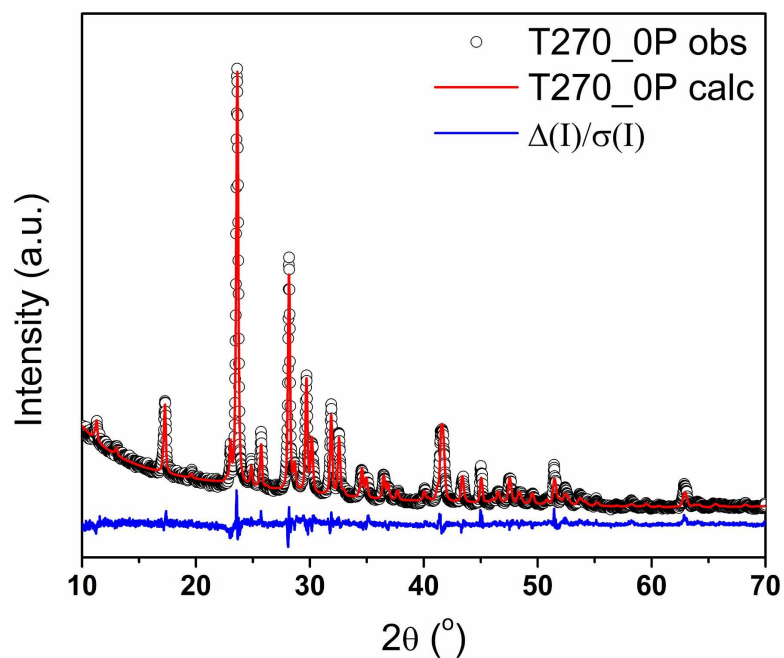
Green solution synthesis of $Bi_{19}S_{27}I_3$ nanoparticles - engineering morphology through polyethylene glycol and photocatalytic activity of Cr^{6+}

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Parameter	Value
R_w (%)	7.940
chi2	14654.4
GoF	1.65
a	15.66103
c	4.0236
Space Group	P63

Figure S1. Rietveld refinement of sample T270_P0 using GSAS-II software. Annex table summarizes the refinement parameters and the unit cell values.
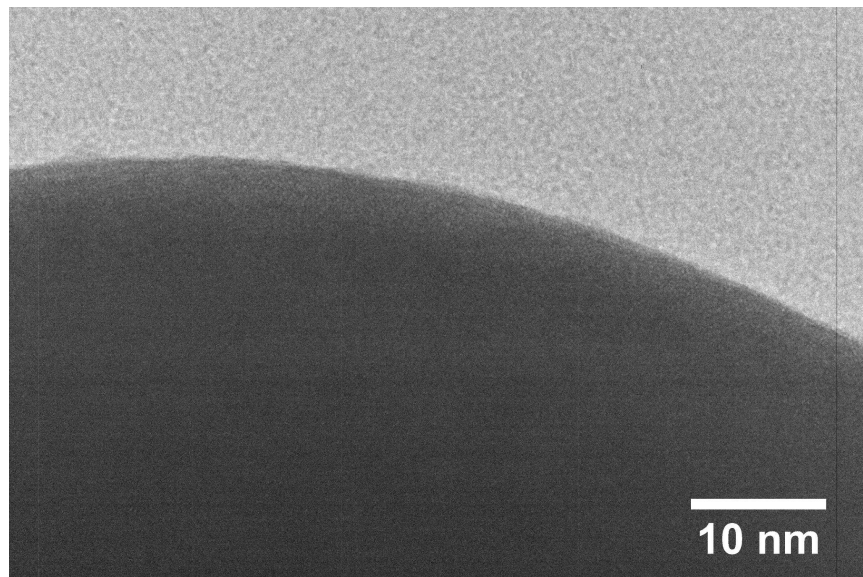
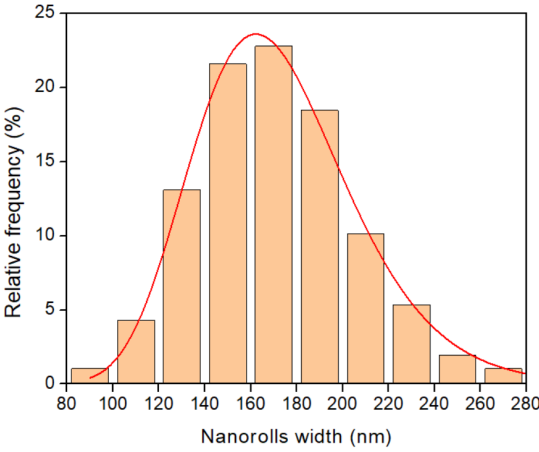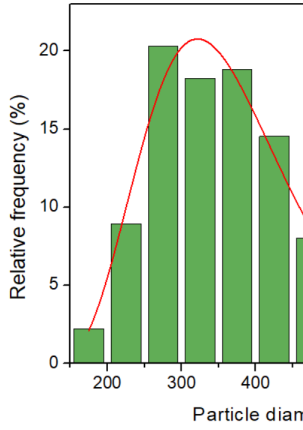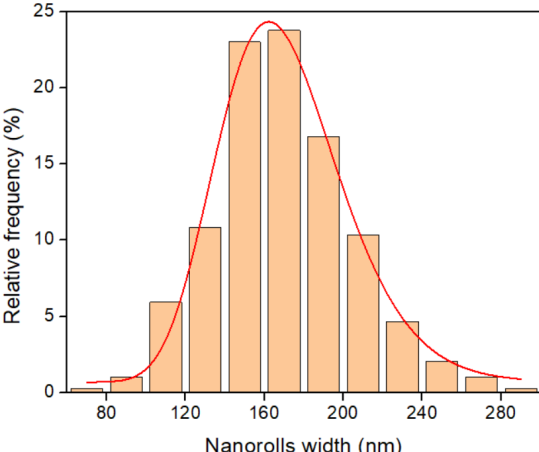Figure S2. TEM image of edge of round nanoparticle of Bi19S27I3.

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

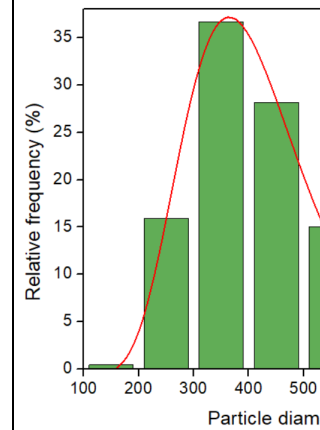The distribution function used to fit all histograms is LogNormal.

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

Sample	Histogram nanorolls	Nanorolls median (sigma)	His
T5_0P		173 (35)	
T270_0P		186 (38)	
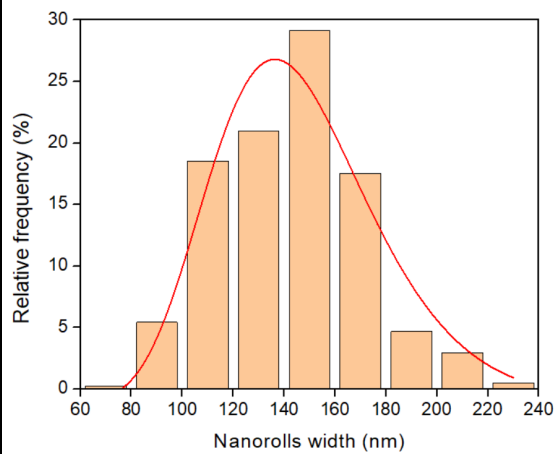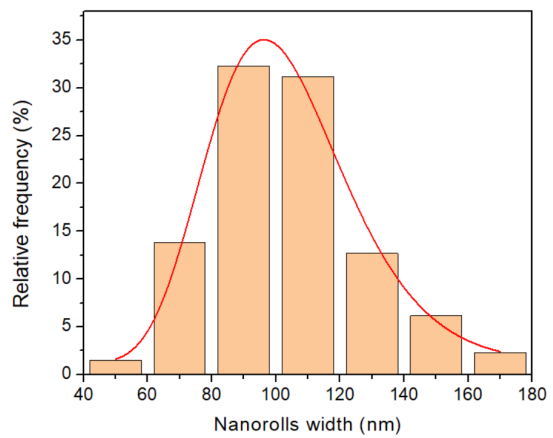
T5_0.5P		147 (34)	
T5_1P		104 (23)	
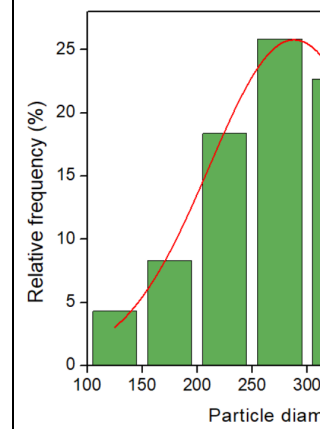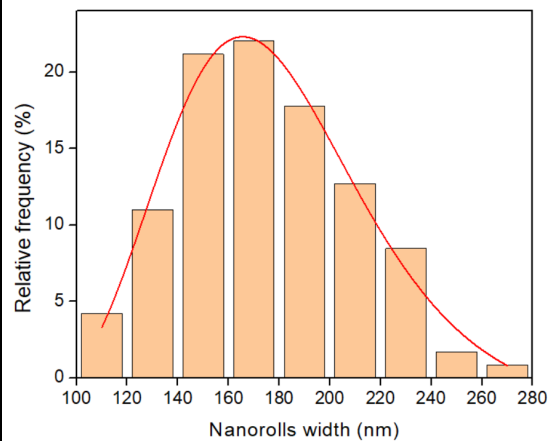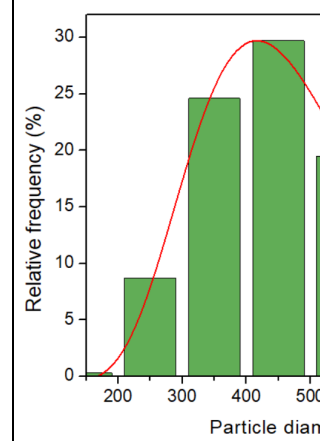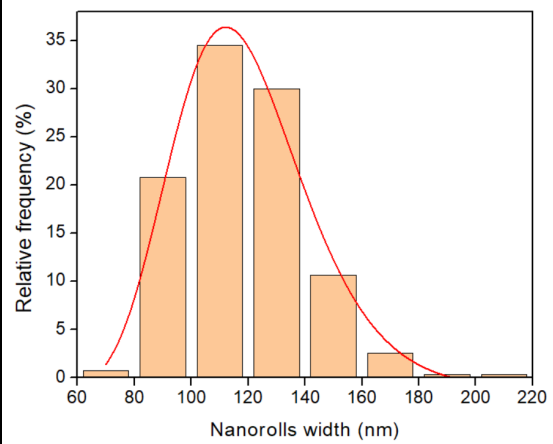
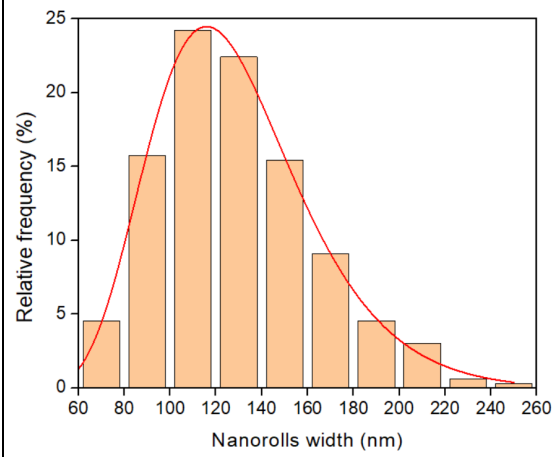|			
T5_2P		180 (42)	
T270_0.5P		119 (24)	
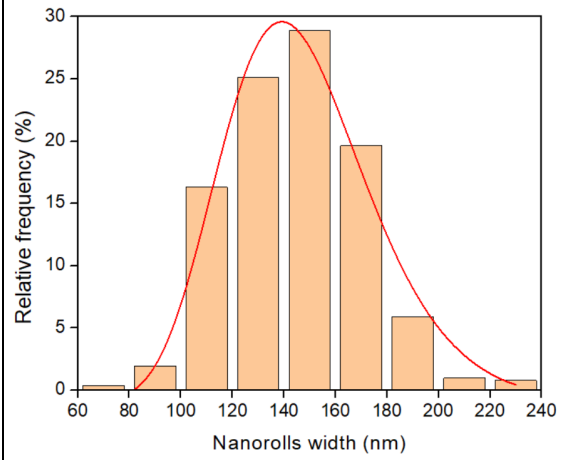
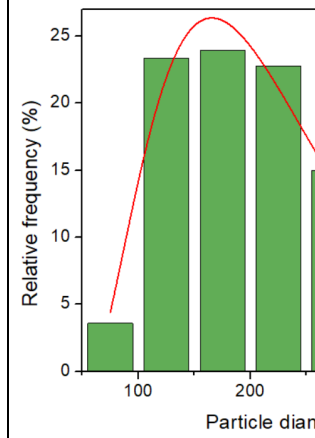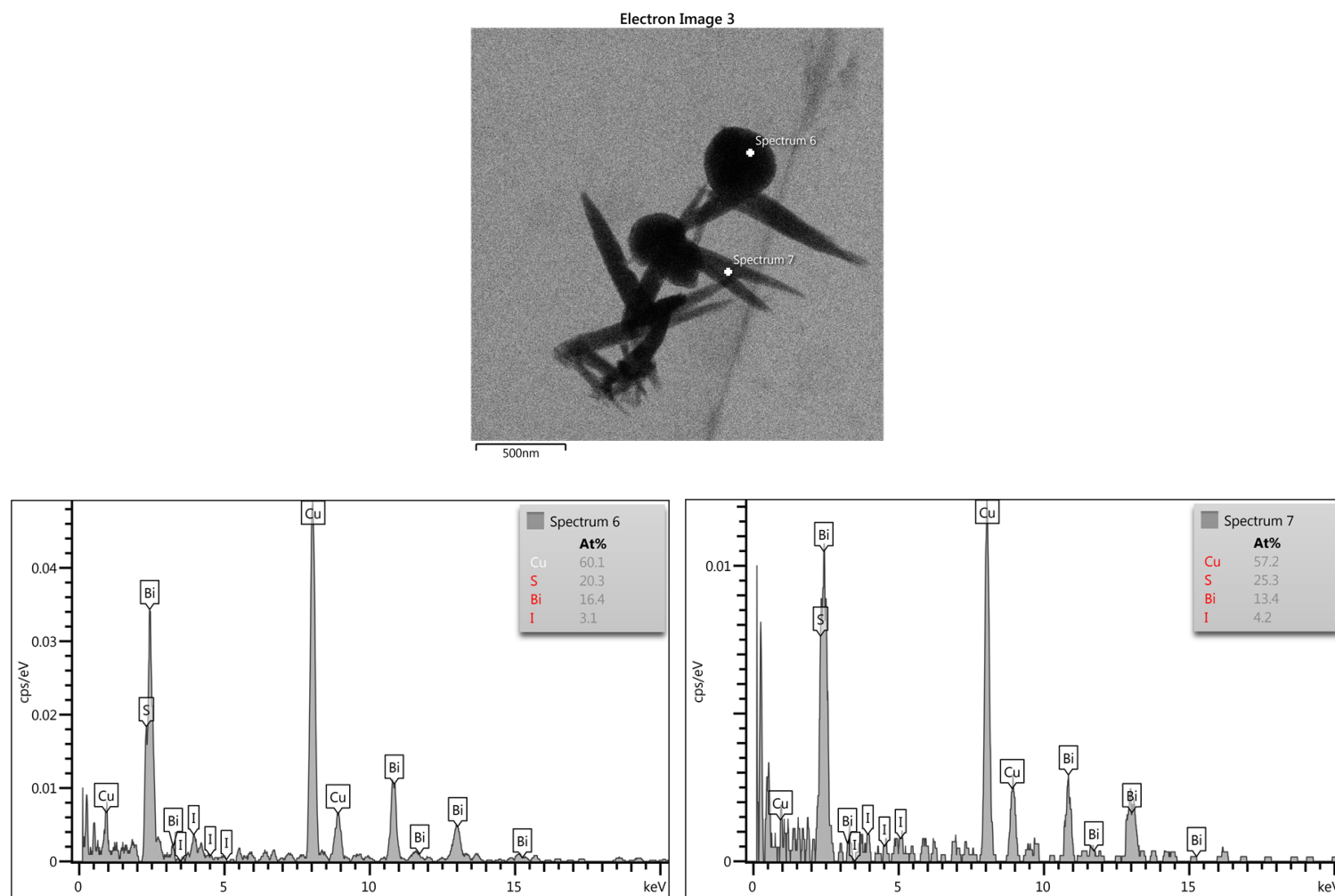|			
T270_I_1P		148 (30)	
T270_I_2P		130 (36)	

Figure S3. STEM image of nanorolls and nanoparticles and EDS spectra of selected points (Sprectrum 6 for round nanoparticle, Spectrum 7 for nanoroll).
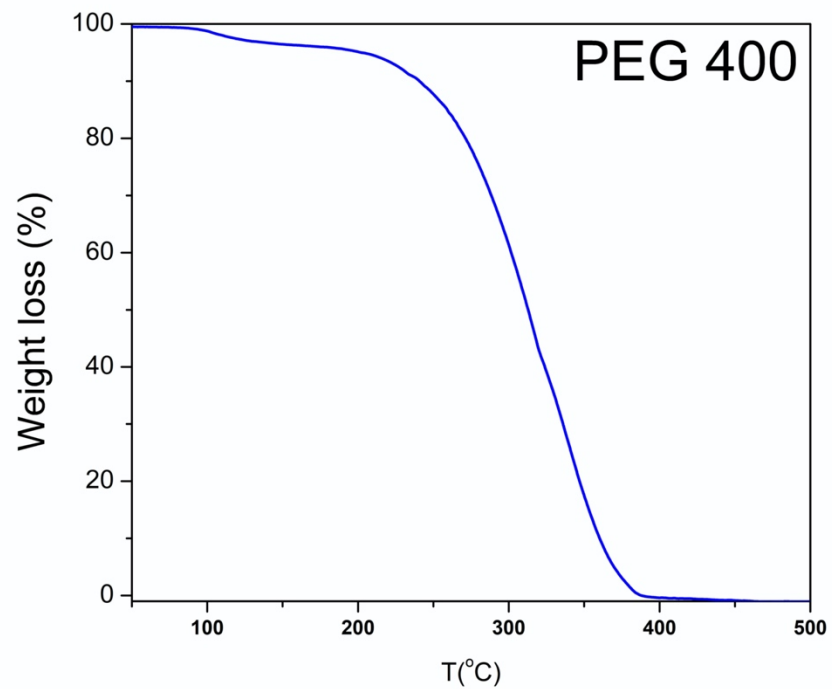
Figure S4. TGA of PEG 400 used in the syntheses of $Bi_{19}S_{27}I_3$.