SUPPLEMENTAL MATERIAL

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Table S1. 18 reports that were returned by the round-robin participants and used methods. One report stated that "no result could be obtained" and the results of one single-line method were clearly in error and therefore are not listed here and couldn't be used in the subsequent analysis of results. For all the acronyms and references refer to the full paper.

Result set number	Method	Data sets analyzed	Domain size (Å), Strain	Comment
1	Warren-Averbach (1952) (WA)	Le Mans	171, 0	Area-weighted domain size
		Birmingham	165, 0	
		NSLS	173, 0	
		ESRF	174, 0	
		NCNR	164, 0	
		ILL	181, 0	
	Lorentz-Lorentz (LL) (Klug & Alexander, 1974)	Le Mans	256, $-8\cdot10^{-5}$	Volume-weighted domain size
		Birmingham	269, $-5\cdot10^{-5}$	
		NSLS	224, $-1.4\cdot10^{-4}$	
		ESRF	234, $-1.0\cdot10^{-4}$	
		NCNR	433, $1.3\cdot10^{-4}$	
		ILL	410, $1.7\cdot10^{-4}$	
2	Voigt-Voigt Langford (1980) (VV1)	Le Mans	219, 0	Small negative strain
		ESRF	223, $1.5\cdot10^{-3}$	Volume-weighted domain size
		ILL	218, $3\cdot10^{-4}$	
	Lorentz-Gauss (LG) (Klug & Alexander, 1974)	Le Mans	211, 0*	
		ESRF	224, $1.3\cdot10^{-3}$	Volume-weighted domain size
		ILL	224, $1.6\cdot10^{-3}$	
	Voigt-Voigt (Balzar 1992) (VV2)	Le Mans	219, 164, 0*	
		ESRF	223, 154, $3\cdot10^{-4}$	The method yields both volume-weighted (first number) and area-weighted (second number) domain sizes.
		ILL	219, 157, 0*	
3	WA	Le Mans	171, 0*	Only [111] direction analyzed for

		Birmingham NSLS ESRF NCNR ILL	169, 0* 173, 0* 146, 0* 240, 0.086 183, 0*	all the data sets Area-weighted domain size Without instrumental-broadening correction
4	Special (monodisperse system of spheres)	Birmingham	286, $8.5 \cdot 10^{-4}$	Mean diameter of spheres determined as D = 38.1 nm, $D_V = 3/4D$
5	VV1 WA	Birmingham Birmingham	226(6), 0 151(12), 0	Volume-weighted domain size Area-weighted domain size
6	Special (log-normal distribution of spherical crystallites)	Le Mans Birmingham NSLS ESRF NCNR ILL	183.3, $1.7 \cdot 10^{-4}$ 175.7, $1 \cdot 10^{-5}$ 189.9, $4.0 \cdot 10^{-4}$ 176.7, $1.19 \cdot 10^{-4}$ 178.9, $8 \cdot 10^{-5}$ 171.5, $1 \cdot 10^{-5}$	Area-weighted domain size
7	Rietveld (1969)	Le Mans Birmingham NCNR ILL	574, $3.3 \cdot 10^{-3}$ 552, $3.4 \cdot 10^{-3}$ 520, $3.2 \cdot 10^{-3}$ 540, $5.2 \cdot 10^{-3}$	Lorentzian size term only Volume-weighted domain size
8	FP (Cheary & Coelho, 1992)	Le Mans	424, $3.07 \cdot 10^{-2}$	Volume-weighted domain size
9	Rietveld	Le Mans ESRF NCNR ILL	351, $1.9 \cdot 10^{-3}$ 313, $1.5 \cdot 10^{-3}$ 373, 0 351, $2.0 \cdot 10^{-3}$	Lorentzian size term only Volume-weighted domain size
10	FP Rietveld	Le Mans Le Mans NSLS ESRF NCNR ILL	225.2, $2.31 \cdot 10^{-4}$ 230, $5.6 \cdot 10^{-5}$ 239.1, $3.4 \cdot 10^{-4}$ 227.1, $1.5 \cdot 10^{-4}$ 229, $8 \cdot 10^{-5}$ 231, $1.8 \cdot 10^{-4}$	Volume-weighted domain size
11	Rietveld	Le Mans Birmingham	376.6, $1.45 \cdot 10^{-3}$ 292.4, 0.00	Weighted Voigt profile Volume-weighted domain size

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Figure Captions:

Figure S1. Rietveld refinement of sample S1: Birmingham data.

Figure S1. Rietveld refinement of sample S1: Le Mans data. The difference curve was offset for clarity.

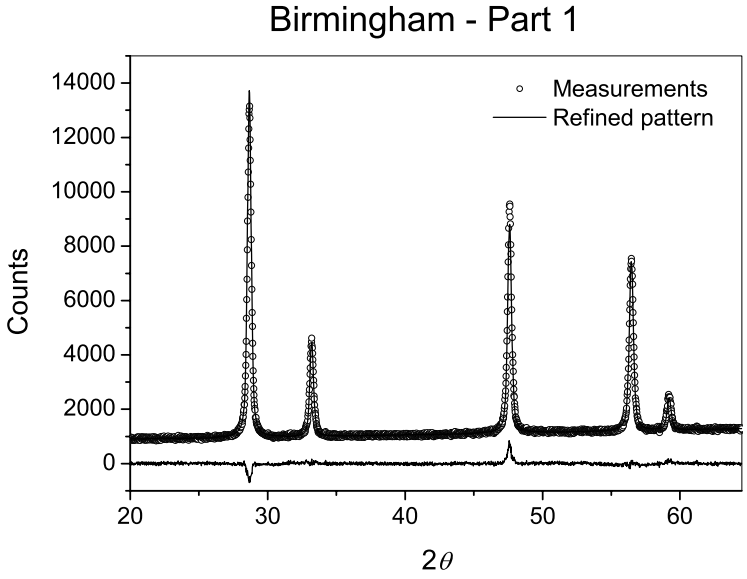
Figure S3. Rietveld refinement of sample S1: ESRF data. The difference curve was offset for clarity.

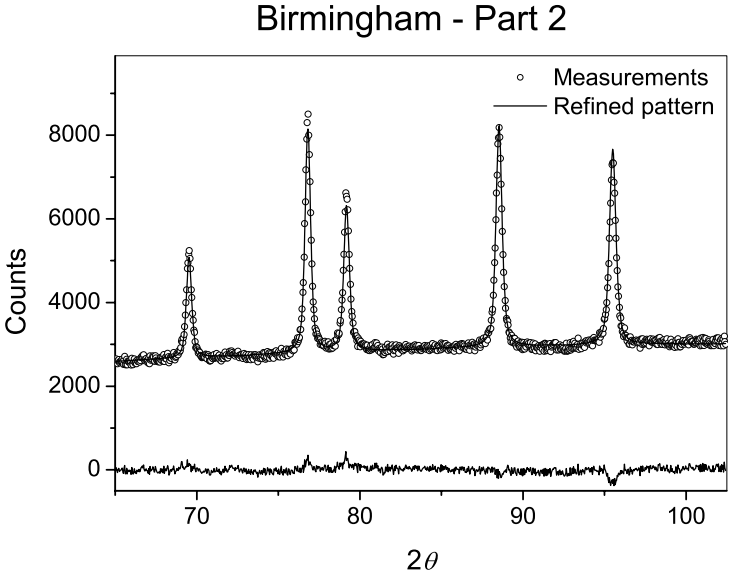
Figure S4. Rietveld refinement of sample S1: NSLS data. The difference curve was offset for clarity.

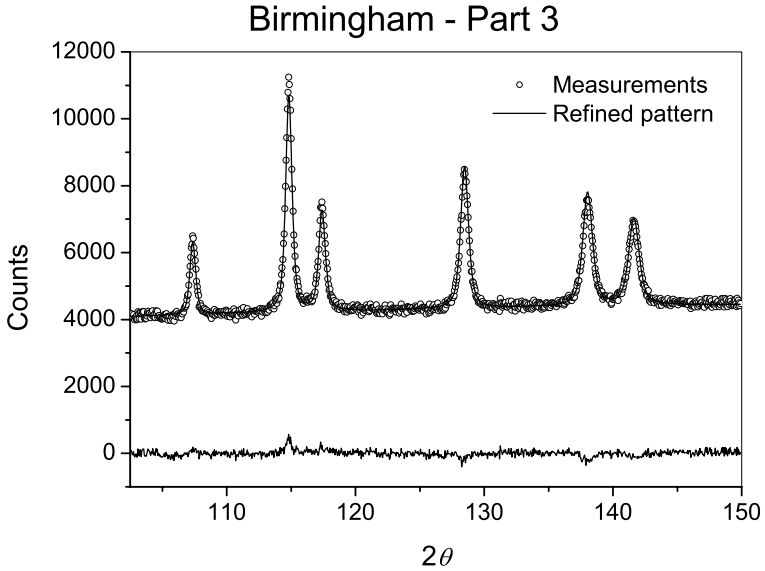
Figure S5. Rietveld refinement of sample S1: ILL data.

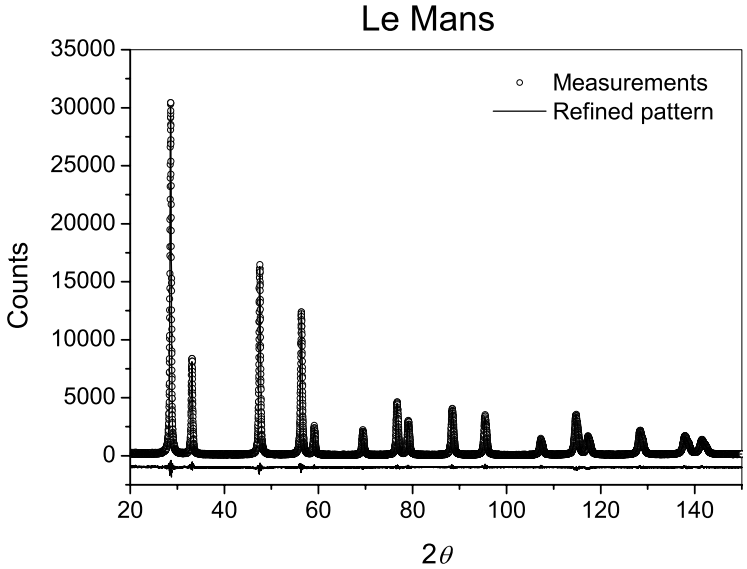
Figure S6. Rietveld refinement of sample S1: NIST data.

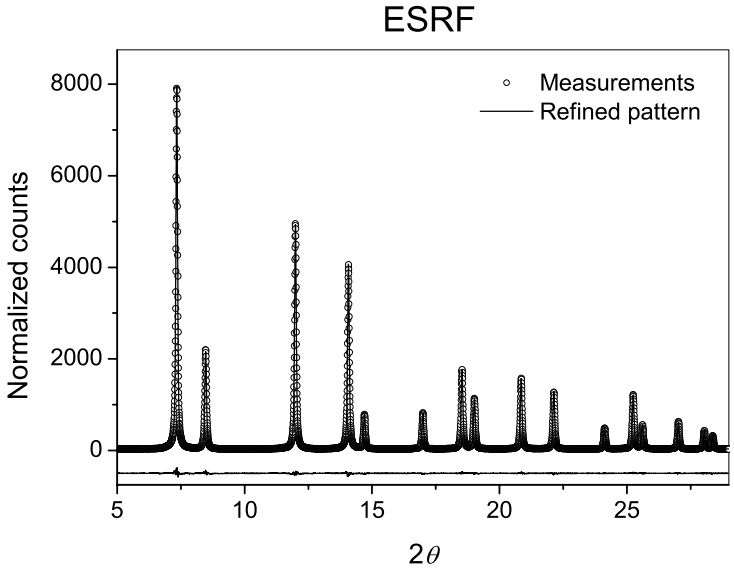
Figure S7. Rietveld refinement of sample S1: ISIS data.

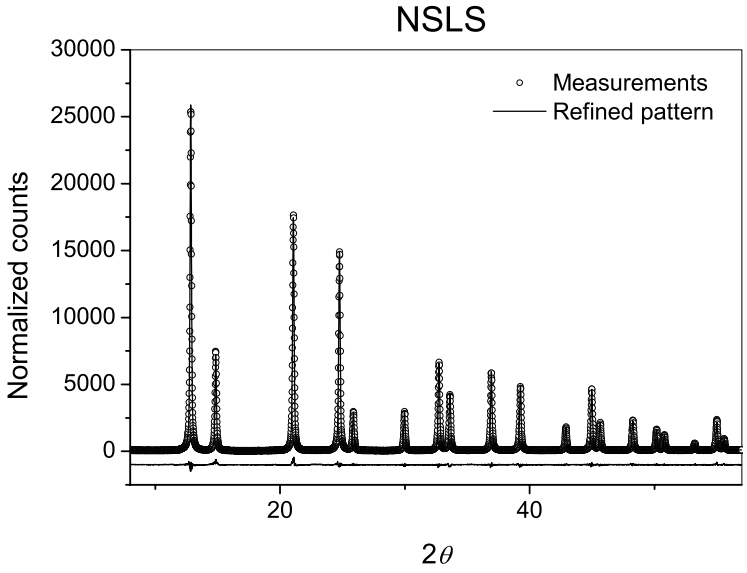

Birmingham - Part 1
Measurements
Refined pattern
Counts
14000
12000
10000
8000
6000
4000
2000
0
20
30
40
50
60
2θ

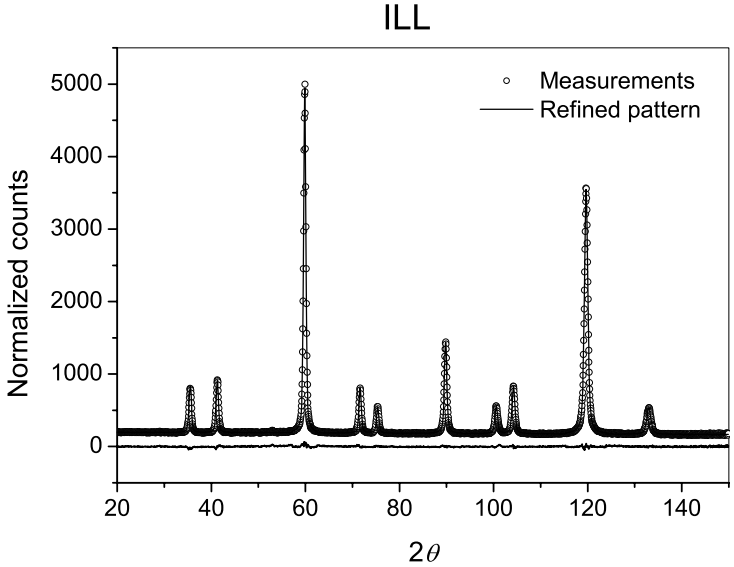

Birmingham - Part 2
Measurements
Refined pattern
Counts
8000
6000
4000
2000
0
70
80
90
100
2θ

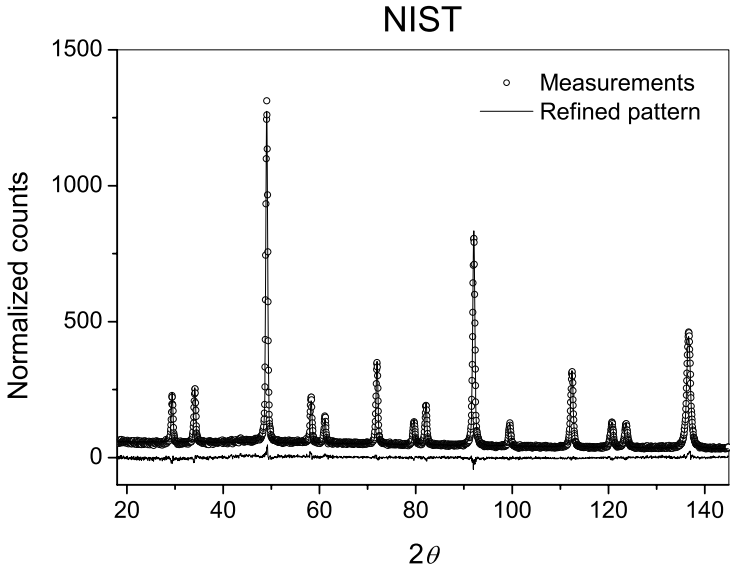

Birmingham - Part 3
Measurements
Refined pattern
Counts
12000
10000
8000
6000
4000
2000
0
110
120
130
140
150
2θ

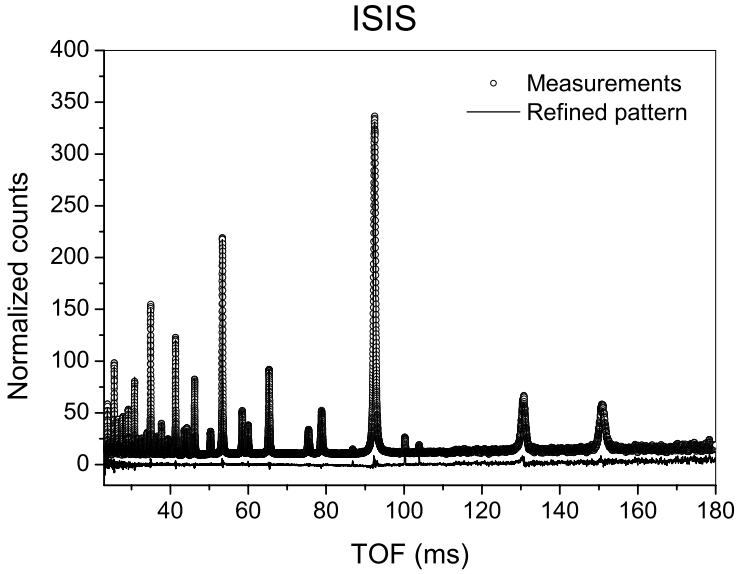

Le Mans
Measurements
Refined pattern
Counts
35000
30000
25000
20000
15000
10000
5000
0
20
40
60
80
100
120
140
2θ


ESRF
Measurements
Refined pattern
Normalized counts
8000
6000
4000
2000
0
5
10
15
20
25
2θ


NSLS
Measurements
Refined pattern
Normalized counts
30000
25000
20000
15000
10000
5000
0
20
40
2θ


ILL
Measurements
Refined pattern
Normalized counts
5000
4000
3000
2000
1000
0
20
40
60
80
100
120
140
2θ


NIST
Measurements
Refined pattern
Normalized counts
1500
1000
500
0
20
40
60
80
100
120
140
2θ


ISIS
Measurements
Refined pattern
Normalized counts
TOF (ms)
0
50
100
150
200
250
300
350
400
40
60
80
100
120
140
160
180