



Supplementary Figure S1: Sample Paper and Pen scoring sheet for side-by-side preference rating.

48		Please select your preferred image for the purpose of crystal detection .				
		Strongly Favor CPLM		Neutral		Strongly Favor SCPLM
		1	2	3	4	5
		Please select your preferred image for the purpose of crystal identification .				
		1	2	3	4	5
49		Please select your preferred image for the purpose of crystal detection .				
		Strongly Favor CPLM		Neutral		Strongly Favor SCPLM
		1	2	3	4	5
		Please select your preferred image for the purpose of crystal identification .				
		1	2	3	4	5
50		Please select your preferred image for the purpose of crystal detection .				
		Strongly Favor CPLM		Neutral		Strongly Favor SCPLM
		1	2	3	4	5
		Please select your preferred image for the purpose of crystal identification .				
		1	2	3	4	5
51		Please select your preferred image for the purpose of crystal detection .				
		Strongly Favor CPLM		Neutral		Strongly Favor SCPLM
		1	2	3	4	5
		Please select your preferred image for the purpose of crystal identification .				
		1	2	3	4	5

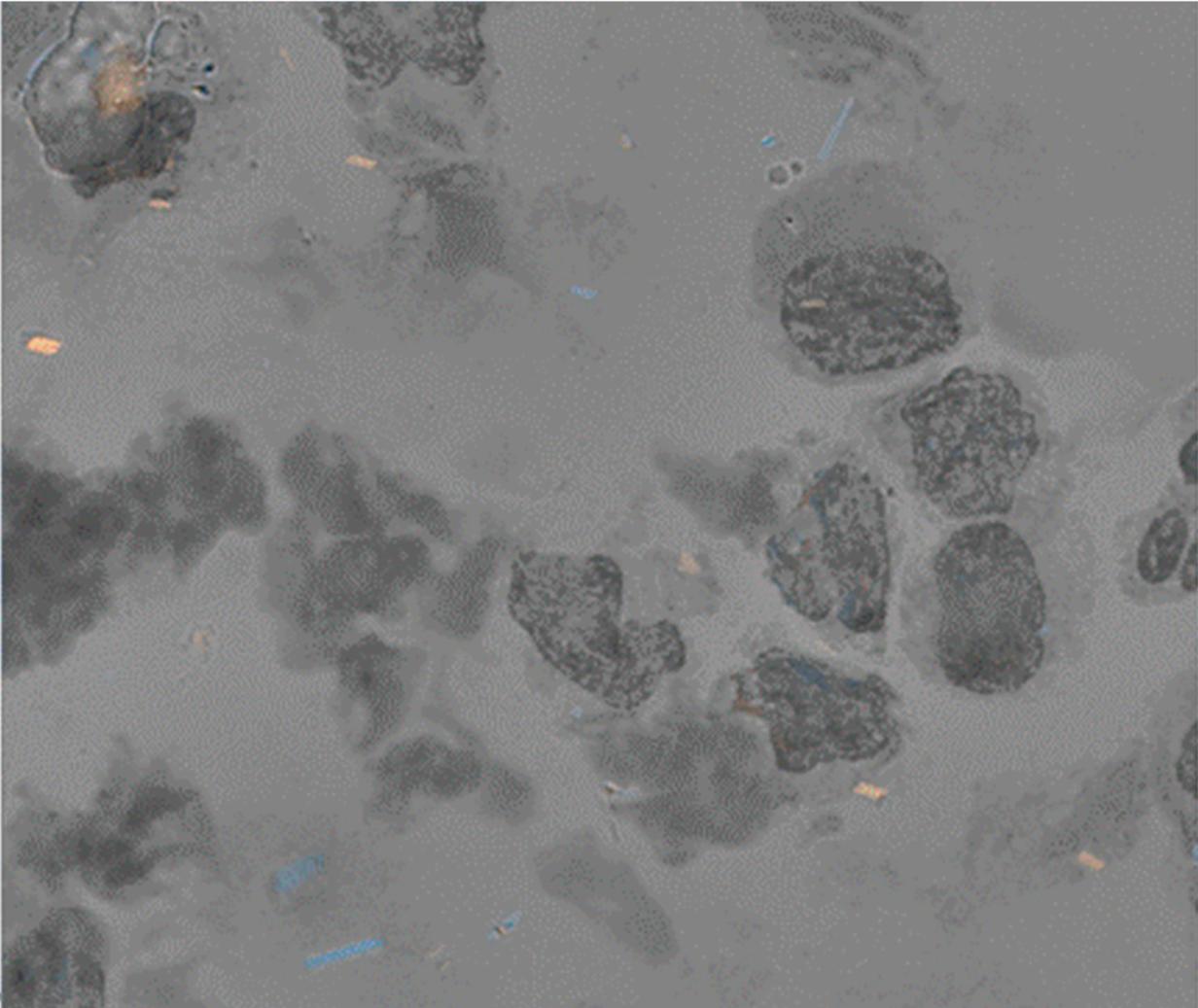
Legend: CPLM = Compensated Polarized Light Microscope. SCPLM = Single Shot Compensated Light Microscope

Supplementary Figure S2: Paper and Pen scoring sheet (for a “crowded” SCPLM FOV and hence excluded from the analytic set)

28

100x
FOV

Slow axis
of
polarization



10 μm

- For the crystals identified, please mark and number the crystal on the image to the left.
- Rate your **certainty** for each crystal below.
- Identify crystal type as M – MSU or C – CPP.
- If no crystals identified circle 0 in the first row.

	Very uncertain (0.0%)		Maybe (0.25%)		Very certain (1.0%)	MSU / CPP
0	1	2	3	4	5	
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
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28						

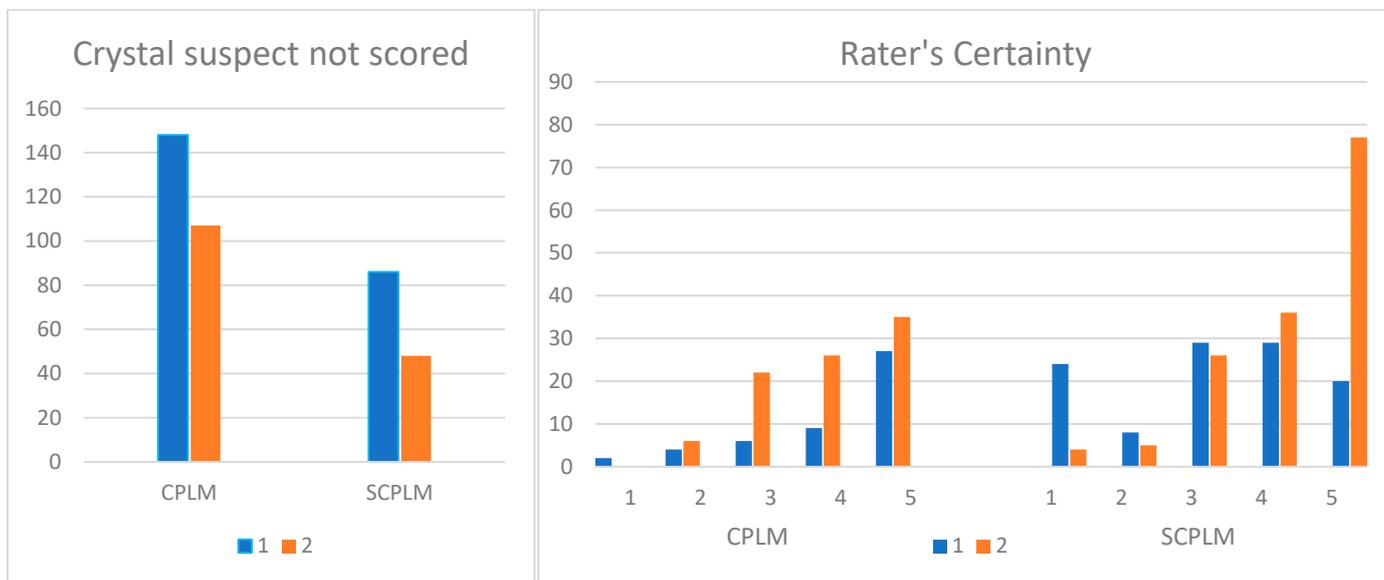
Rate your **overall satisfaction** with this image for the purpose of **detecting** crystals.

	Not at all satisfied		Neutral		Very satisfied
0	1	2	3	4	5

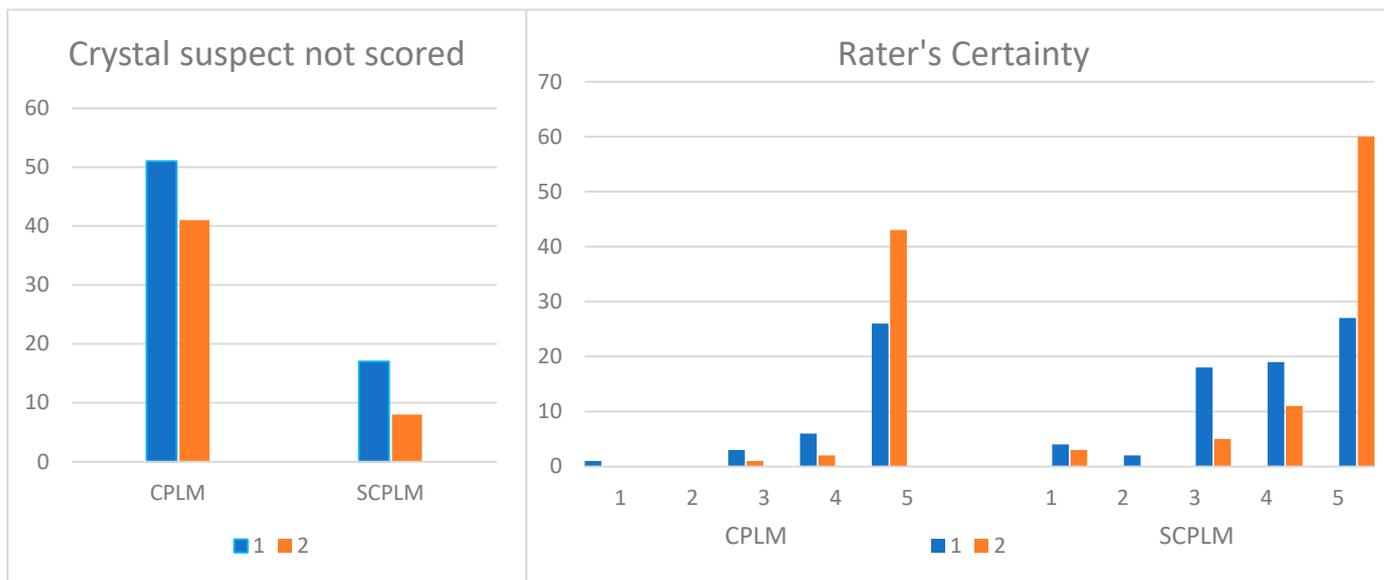
Legend: SCPLM = Single Shot Compensated Light Microscope. FOV = Field of View. MSU = Monosodium Urate. CPP = Calcium Pyrophosphate.

Supplementary Figure S3: Histogram of raters' detection and certainty scores (1-5).

A) Calcium Pyrophosphate Crystals (196 total crystals identified as CPP by either method or rater)



B) Monosodium Urate Crystals (87 total crystals identified as CPP by either method or rater)

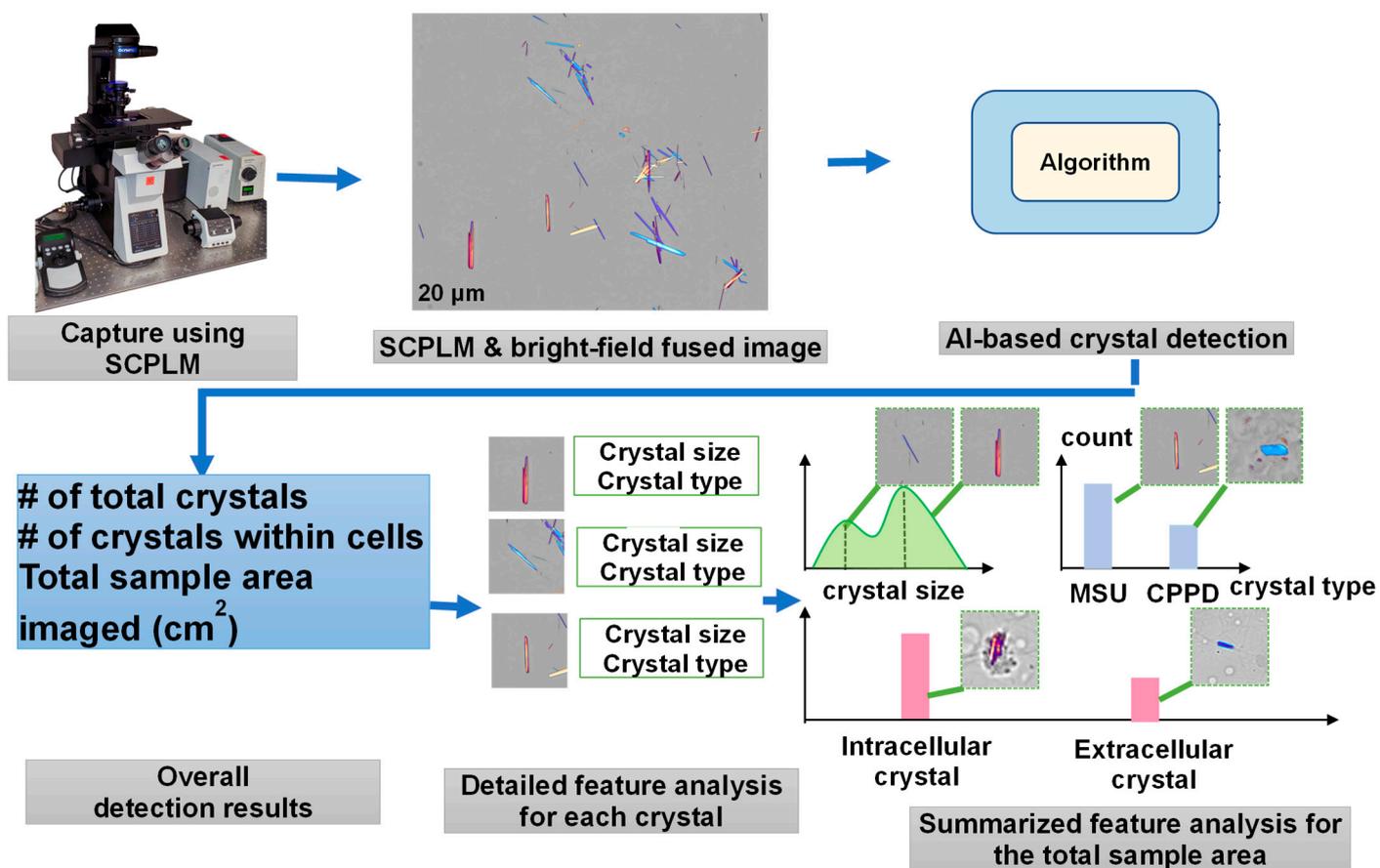


Legend: Rater 1 = Blue, Rater 2 = Orange.

Color bars show ratings from 1 (very uncertain) – 5 (very certain).

SCPLM = Single Shot Computational Polarized Light Microscopy. CPLM = Compensated Polarized Light Microscopy.

Supplementary Figure S4: Planned workflow for automated crystal detection, count and description



Legend: SCPLM = Single Shot Compensated Light Microscope. FOV = Field of View. MSU = Monosodium Urate. CPPD = Calcium Pyrophosphate.