Supplemental Document

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Lock-in amplitude-phase correlations for enhanced imaging and segmentation in stimulated Raman scattering microscopy: supplement

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Lock-in Amplitude-Phase Correlations for Enhanced Imaging and Segmentation in Stimulated Raman Scattering Microscopy: supplemental document

	XPM		SFG	
Pump Wavelength (nm)	998	979	998	979
Time Zero Shift (fs)	-470 $\pm$ 8	-910 $\pm$ 10	-179 $\pm$ 3	-249 $\pm$ 5
Cross-Correlation FWHM (ps)	3.11 $\pm$0.02	3.64 $\pm$0.03	2.924 $\pm$ 0.008	3.01 $\pm$ 0.01

Table S1. Comparison of the fit parameters for the cross-correlation dependent terms in the experiment. The Time Zero Shift" is the shift in the time zero (in fs) relative to the midpoint of the scan range. The Cross-Correlation FWHM is the Full-Width at Half Maximum (in ps) for the fitted Gaussian.

Pump Wavelength (nm)	998	979
Time Zero Shift (fs)	291 $\pm$ 8	660 $\pm$ 10
Cross-Correlation Change (fs)	180 $\pm$ 20	640 $\pm$ 30

Table S2. The Time Zero Shift corresponds to the shift in time zero between the XPM fit and the SFG fit (in fs). Similarly, the Cross-Correlation change is the change in the cross-correlations for the fits (in fs)

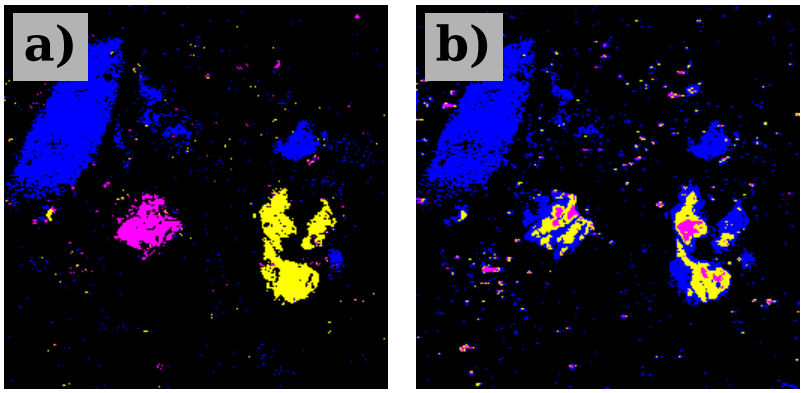

Fig. S1. Comparison of the mask produced in Fig. 9d) against a mask using the amplitude alone.

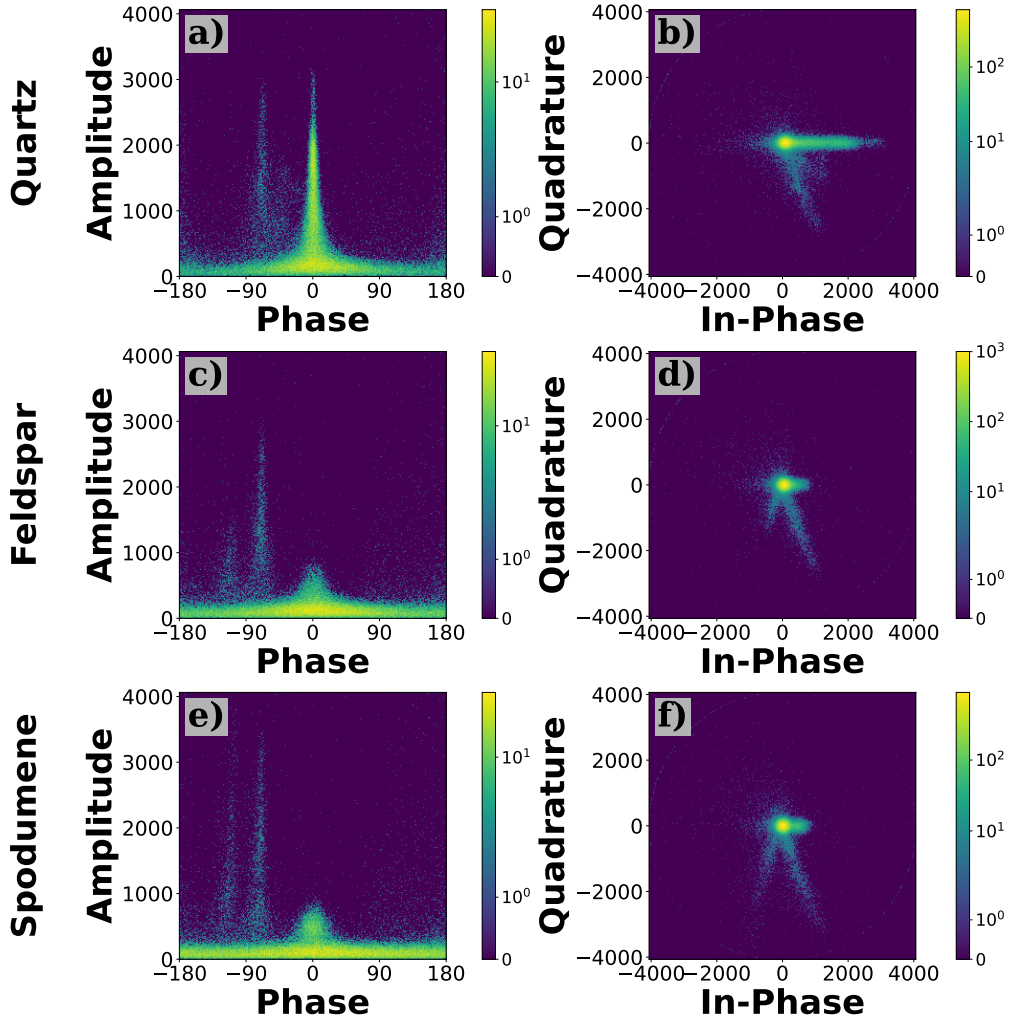

Fig. S2. Visualizations of the correlations between the two complementary signals collected for the three "characteristic frames" presented in Fig. 4. The first column corresponds to the Amplitude-Phase correlations while the second column corresponds to the In-Phase-Quadrature correlations. The first row, Figs. a) and b) correspond to the correlations for Quartz. The second row, Figs. c) and d) correspond to the correlations for Feldspar and the final row Figs. e) and f) correspond to the correlations for Spodumene.