## Electronic Supplementary Information

## Combined Measurement of Directional Raman Scattering and Surface-Plasmon-Polariton Cone from Adsorbates on Smooth Planar Gold Surfaces

Charles K. A. Nyamekye, Stephen C. Weibel, Jonathan M. Bobbitt, and Emily A. Smith\*

Ames Laboratory, U.S. Department of Energy, Department of Chemistry, Iowa State University, Ames, Iowa 50011-3111 and Surface Photonics Inc., Madison, Wisconsin 53719, United States

\*esmith1@iastate.edu

**Fig. S1** Thickness of poly(bisphenol A carbonate) and polystyrene samples measured by optical profilometry. Data shaded in blue are poly(bisphenol A carbonate) and data shaded in gray are polystyrene. Uncertainties represent one standard deviation.



**Fig. S2** Selected cone images at the designated incident angle from the provided supplemental movie. The incident angle was scanned from 0.00° to 60.00°. The movie is included in the supplemental information as an AVI file. All images of the cone were collected with a fixed distance between FL2 and the camera.

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$\theta_{inc} = 29.39^{\circ}$	$\theta_{inc} = 35.09^{\circ}$	$\theta_{inc} = 35.53^{\circ}$	$\theta_{inc} = 36.41^{\circ}$	θ <sub>inc</sub> = 40.88°

**Fig. S3** Calculated far-field angular radiation pattern for (A) 10 nm (pink) and 50 nm (cyan) poly(bisphenol A carbonate) and (B) 30 nm (gold), 60 nm (black), 70 nm (red), 80 nm (blue), 90 nm (green), and 100 nm (purple) polystyrene films. The angles of the directional scattered light are (A) 35.77° (10 nm), and 39.64° (50 nm), and (B) 37.17° (30 nm), 40.779° (60 nm), 43.19° (70 nm), 45.61° (80 nm), 46.35° (90 nm), and 47.55° (100 nm), respectively. The angular radiation pattern on the air side has been multiplied by 20.



**Fig. S4** The directional-surface-plasmon-coupled Raman scattering spectra of (A) 10-nm poly(bisphenol A carbonate) and (B) 100-nm polystyrene adsorbed on a smooth planar gold film acquired at incident angles ( $\theta_{inc}$ ) of 36.00° and 48.75°, respectively. The acquisition time was 180 s with 2 accumulation for the 10-nm poly(bisphenol A carbonate) film and 30 s with 2 accumulations for the 100-nm polystyrene film. The asterisk (\*) represents peaks that originate from the sapphire prism.

