

Supplementary Information

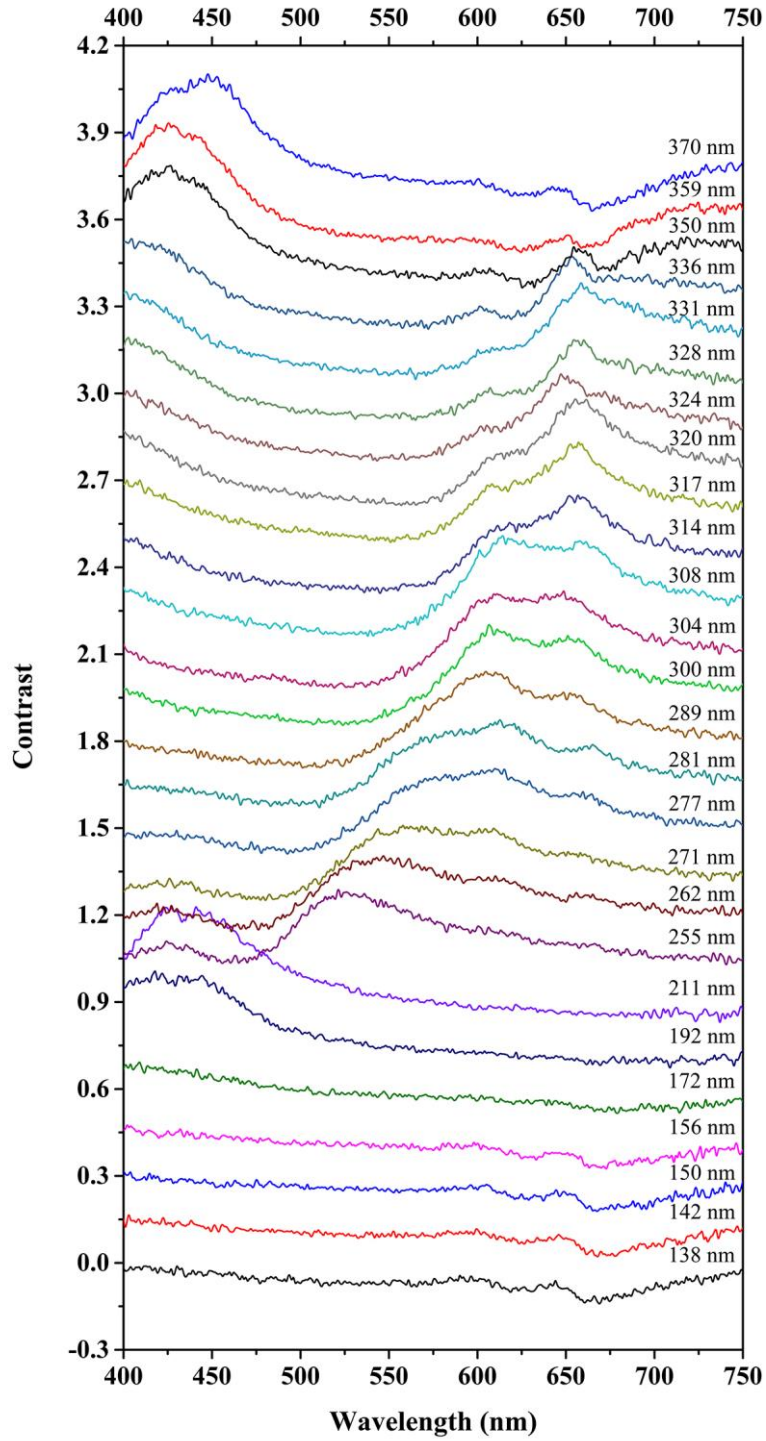
Measuring the Refractive Index of Highly Crystalline Monolayer MoS₂ with High Confidence

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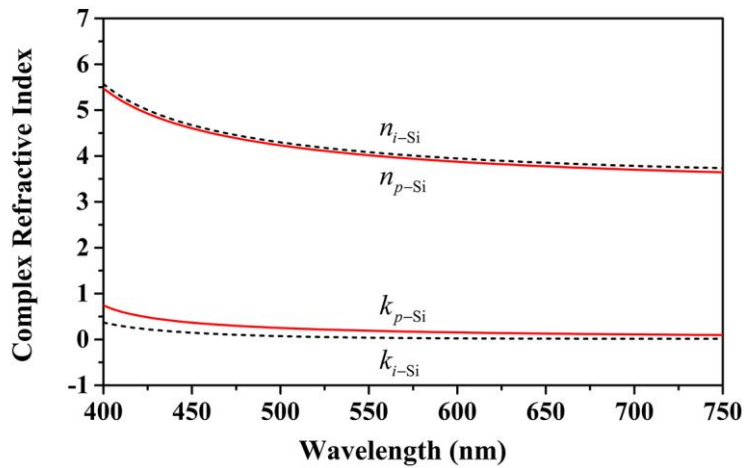
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Supplementary Figure S1: The optical contrast spectra of 26 monolayer MoS₂ samples on various SiO₂/Si substrates with SiO₂ thickness changing from ~ 130 nm to ~ 370 nm. We add 0.15 to each curve in sequence to stagger them.



Supplementary Figure S2: The refractive index of the p -Si (resistivity: 8-12 Ω -cm) substrate (red solid lines) measured by the ellipsometer (Horiba Jobin Yvon Uvisel). The refractive index of intrinsic silicon¹ (black dashed lines) is also plotted in this figure for comparison.

Confidence Interval and Confidence Level:

Confidence level reflects the probability that the true value locates in the confidence interval². 95% is a typical high confidence level in statistics. In our case, it means that the true value of the refractive index locates in the confidence interval with 95% probability.

The confidence interval is extracted from the estimate value of parameter, the standard error, and the t-value. The t-value is a statistic factor of Student's t-distribution^{3, 4}, which is determined by the confidence level and the number of samples.

Supplementary Reference:

1. Palik, E. D. *Handbook of optical constants of solids*. Academic Press (1985).
2. Cox, D. R., Hinkley, D.V. *Theoretical Statistics*. Chapman and Hall (1974)
3. Gosset, W. S. The probable error of a mean. *Biometrika* **6**, 1-25 (1908)
4. Hogg, R. V., Craig, A. T. *Introduction to Mathematical Statistics*. Macmillan (1978)