

Supporting Information for:

Large-Area Growth and Stability of Monolayer Gallium Monochalcogenides for Optoelectronic Devices.

*Tariq Afaneh¹, Algene Fryer¹, Yan Xin², Robert H. Hyde¹, Nalaka Kapuruge¹ and Humberto R. Gutiérrez¹**

¹ Department of Physics, University of South Florida, Tampa, Florida 33620, U.S.A.

² National High Magnetic Field Laboratory, Florida State University, Tallahassee, Florida 32310, U.S.A.

* Corresponding Author: humberto3@usf.edu

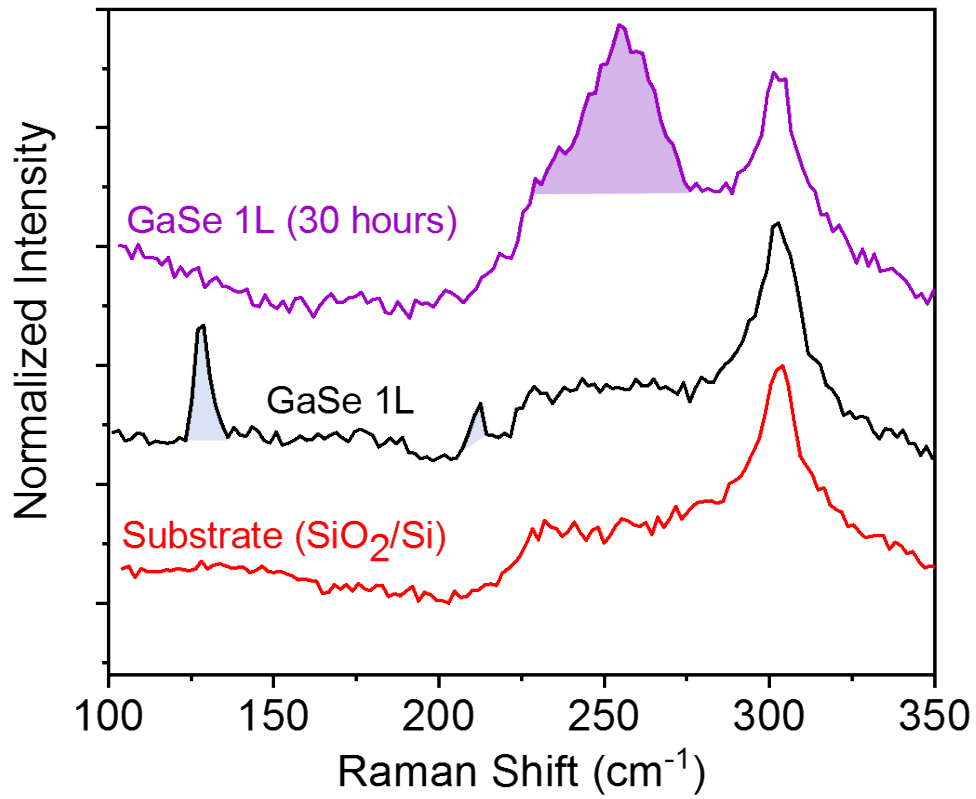


Figure S1. Comparison of Raman spectra from SiO₂/Si substrate, as-grown monolayer GaSe and monolayer GaSe after complete oxidation.

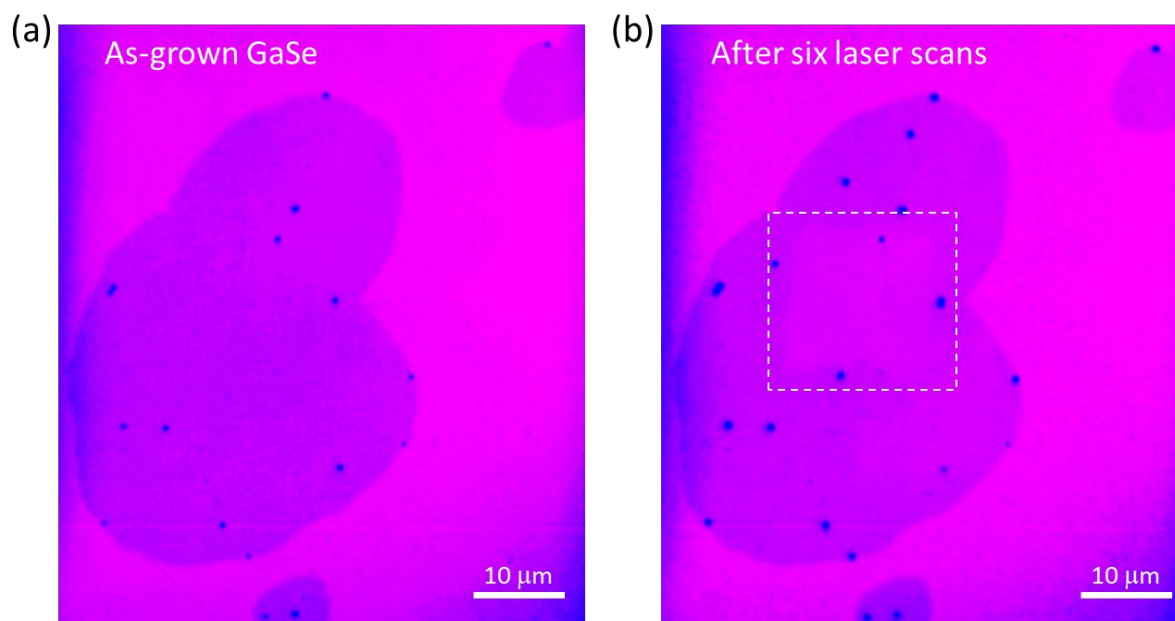


Figure S2. Optical images of (a) as-grown GaSe monolayer and (b) same region of the sample after six laser scans. The change in contrast within the square region scanned by the laser is due to laser-induced damage. The blue dots also grow in size and number.

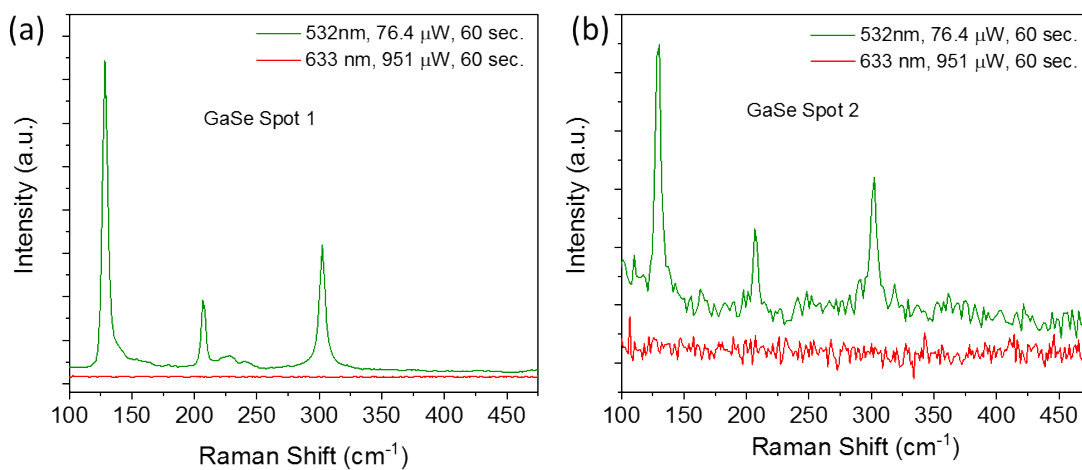


Figure S3. Comparison of Raman spectra taken at different points in a multilayer thick GaSe sample with the excitation lasers 532 nm (green curve) and 633 nm (red curve). No spectra can be observed with the red laser.

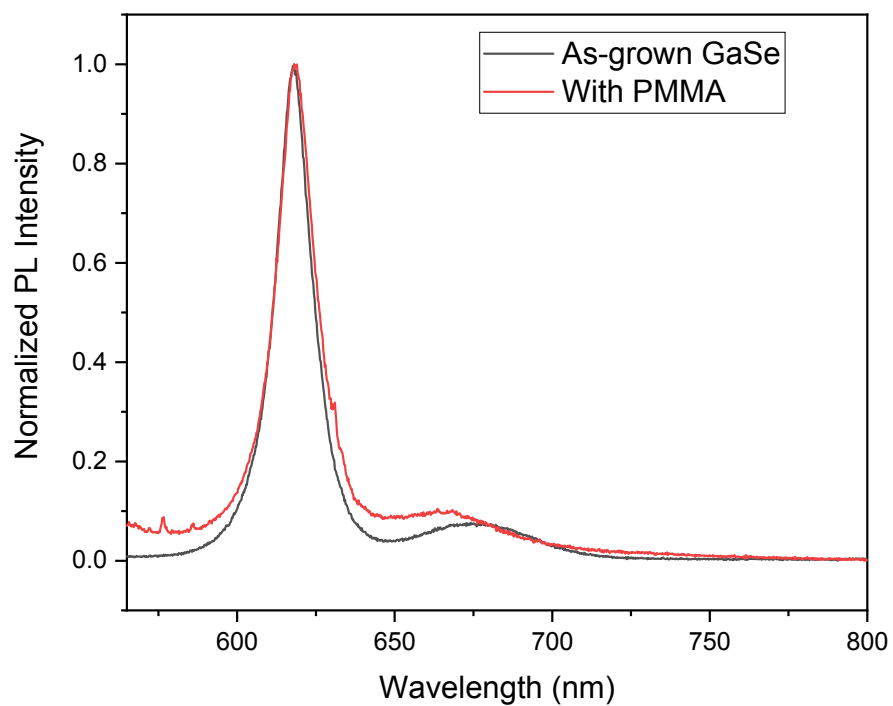


Figure S4. Photoluminescence spectra of a multilayer thick GaSe sample before (black curve) and after (red curve) depositing a PMMA capping layer.