2D Crystal Consortium
NSF Materials Innovation Platform

PennState Materials Research Institute

TMD Films Grown by MOCVD on Sapphire

MOCVD epitaxial TMD films on double side polished (DSP) 2-inch c-plane sapphire.

Material	Sample Size	Sample Thickness	Substrate	Characterization	Price
Monolayer MoS2	2-inch wafer	Monolayer	c-plane sapphire (DSP)	AFM, Raman, PL	$1100
Bilayer MoS2	2-inch wafer	Bilayer	c-plane sapphire (DSP)	AFM, Raman	$1300
Monolayer WS2	2-inch wafer	Monolayer	c-plane sapphire (DSP)	AFM, Raman, PL	$1100
Monolayer WSe2	2-inch wafer	Monolayer	c-plane sapphire (DSP)	AFM, Raman, PL	$1100
Bilayer WSe2	2-inch wafer	Bilayer	c-plane sapphire (DSP)	AFM, Raman	$1300

TMD Films Pre-Transferred on PMMA/Thermal Release Tape (TRT)

MOCVD TMD films grown on sapphire substrates that have been removed from the sapphire using PMMA/TRT. The pre-transfer steps enable ease of integration with other substrates. The TMD/PMMA/TRT can be attached to the substrate of choice, followed by heating to remove the TRT and soak in acetone to remove the PMMA.

Material	Sample Size	Sample Thickness	Substrate	Characterization	Price
Transferred Monolayer MoS2	2-inch wafer-scale	Monolayer	PMMA/TRT	AFM, Raman, PL prior to transfer	$1900
Transferred Monolayer MoS2	1cm-by-1cm piece	Monolayer	PMMA/TRT	AFM, Raman, PL prior to transfer	$300
Transferred Bilayer MoS2	2-inch wafer-scale	Bilayer	PMMA/TRT	AFM, Raman prior to transfer	$2100
Transferred Bilayer MoS2	1cm-by-1cm piece	Bilayer	PMMA/TRT	AFM, Raman prior to transfer	$300
Transferred Monolayer WS2	2-inch wafer-scale	Monolayer	PMMA/TRT	AFM, Raman, PL prior to transfer	$1900
Transferred Monolayer WS2	1cm-by-1cm piece	Monolayer	PMMA/TRT	AFM, Raman, PL prior to transfer	$300
Transferred Monolayer WSe2	2-inch wafer-scale	Monolayer	PMMA/TRT	AFM, Raman, PL prior to transfer	$1900
Transferred Monolayer WSe2	1cm-by-1cm piece	Monolayer	PMMA/TRT	AFM, Raman, PL prior to transfer	$300
Transferred Bilayer WSe2	2-inch wafer-scale	Bilayer	PMMA/TRT	AFM, Raman prior to transfer	$2100
Transferred Bilayer WSe2	1cm-by-1cm piece	Bilayer	PMMA/TRT	AFM, Raman prior to transfer	$300