

# Pilot and volume production PLD

Solmates' equipment is the ultimate proof that PLD has now reached the maturity level of High Volume Manufacturing. This system is designed for low maintenance and low cost of ownership. Equipped with automated wafer handling it offers high stability and run-to-run consistency at commercial throughput and yield.

The pilot and volume production Pulsed Laser Deposition series accelerate the entry of novel material into commercial products. Alternative deposition processes are required in order to meet upcoming technology nodes in power.

- Designed for stability, reliability and low maintenance
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- Low cost of ownership, commercial throughput and yield
- Patented (time-of-flight) particle filter technology
- Compact target size and high target utilization
- Suitable for ballroom and bay-chase cleanrooms
- Human machine interface via touch screen
- SEMI compliant software host interface
- SEMI S2 compliant and CE certified: interlocks and safety features
- Ease of use for daily operation
- Automated wafer handling with 1 or 2 cassette loadports
- Integration to any mainframe

*Together with you Solmates invests in the production of high quality layers. A service team of highly skilled process operators is available for training, maintaining and trouble-shooting on your desired process. Whether it concerns processes on our high-volume production tool or on one of our R&D platforms, Solmates ensures a reliable process.*



Solmates' unique solution for stable and cost effective thin film manufacturing

# Global service network, proven track record and process development support for your manufacturing needs

## Equipment

<b>Substrate dimensions</b>	Up to Ø300 mm
<b>Substrate shape</b>	Round and square
<b>Laser</b>	KrF excimer laser
<b>Beam delivery</b>	Complete integrated optics
<b>Process temperature</b>	RT – 750°C
<b>Substrate temperature-uniformity</b>	<2%
<b>Process gasses</b>	O <sub>2</sub> , Ar, N <sub>2</sub> – others on request (forming gas)
<b>Particles</b>	Active particle filtering technology

## Process specifications

<b>Thickness uniformity</b>	
W / W	< 2 % 1s
WtW / RtR	< 1.5 % 1s
<b>Composition uniformity</b>	< 2 % 1s

## Options

- Host interface
- Target library loadlock

Markets	Application / functionality	Materials
<b>OLED &amp; LED</b>	Anti-reflection, TCO's, barriers, passivation	Al <sub>2</sub> O <sub>3</sub> , AZO, HfO <sub>2</sub> , IGZO, ITO, MgO, Mg-ZnO, Ta <sub>2</sub> O <sub>5</sub> , ZnO, ZrO <sub>2</sub>
<b>MEMS &amp; NEMS</b>	Sensing, actuation, acoustics	Al <sub>2</sub> O <sub>3</sub> , BiFeO <sub>3</sub> , KNN, LaNiO <sub>3</sub> , PbTiO <sub>3</sub> , Pb(Zr,Ti)O <sub>3</sub> , PMN-PT, SrRuO <sub>3</sub> , LiNbO <sub>3</sub> , ZnO, AlN, Sc:AlN, HfO <sub>2</sub>
<b>CMOS &amp; power IC</b>	High-k, passivation, barriers, spintronics	AlN, Al <sub>2</sub> O <sub>3</sub> , CeO <sub>2</sub> , HfO <sub>2</sub> , MgO, PZT, SrTiO <sub>3</sub> , TiN, ZrO <sub>2</sub>
<b>Energy</b>	SOFC, PV, batteries, thermoelectrics	YSZ, CIGS, Gd-CeO <sub>2</sub> , ITO, (La,Sr)(Co,Fe)O <sub>3</sub> , Li <sub>x</sub> MnO <sub>2</sub> , Li <sub>x</sub> CoO <sub>2</sub> , Na <sub>x</sub> CoO <sub>2</sub> , Zn <sub>1-x</sub> Al <sub>x</sub> O
<b>Photonics</b>	Electro-optics, IR-detection, waveguides, quantum computing, Pockels	Al <sub>2</sub> O <sub>3</sub> , BaTiO <sub>3</sub> , ITO, LiNbO <sub>3</sub> , PLZT, Y <sub>3</sub> Fe <sub>5</sub> O <sub>12</sub> , ZnO
<b>Memory</b>	MRAM	BiFeO <sub>3</sub> , CoFe <sub>2</sub> O <sub>4</sub> , CrO <sub>2</sub> , LSMO, MnFe <sub>2</sub> O <sub>4</sub> , MnO
<b>Conductors</b>	Electrodes, reflectors, alloys, superconductors, metal-insulator transition, oxide electrodes	Ba(Bi, Pb)O <sub>3</sub> , LaNiO <sub>3</sub> , SrRuO <sub>3</sub> , SrLaCuO <sub>4</sub> , V <sub>2</sub> O <sub>3</sub> , Yba <sub>2</sub> Cu <sub>3</sub> O <sub>7-x</sub> , ITO
<b>Epitaxy</b>	templates, superlattices, 2D-materials	CeO <sub>2</sub> , GaN, LaAlO <sub>3</sub> , MgO, SrTiO <sub>3</sub> , TiN, YSZ, MoS <sub>2</sub>
<b>RF &amp; 5G</b>	SAW, BAW, discrete devices (varactors, beam-steering, high-K)	AlN, BN, BaTiO <sub>3</sub> , Ba1-xSrxTiO <sub>3</sub> , Sc:AlN, LiNbO <sub>3</sub>

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 THIN FILM EQUIPMENT