scia systems

scia Multi 300

UNIFORM MULTILAYERS ON 300 mm WAFERS

Features & Benefits

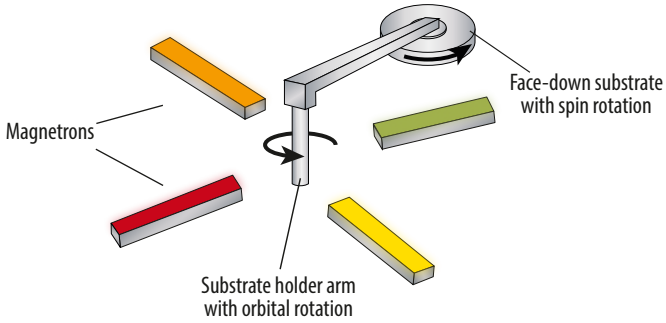
- Excellent uniformity over 300 mm substrate area
- Synchronized orbital and spin rotation for uniform multilayer films on wafers
- 4 magnetrons, each with individual gas supply and shutter unit
- Automatic cassette handling system with load lock
- Substrate face-down orientation for minimized particle load

Applications

- Gradient multilayer coatings of mirrors for soft X-ray and anti-reflective coatings
- Multilayer stacks for EUV and X-ray mirrors
- GMR and TMR based multilayer coatings
- Multilayer coating for UV and VIS optics

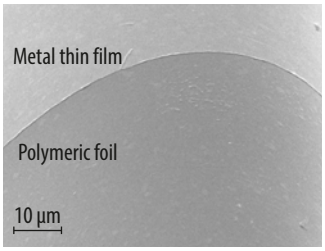
Principle

- Magnetron Sputtering
  - Circular substrate movement across magnetrons, each orbital rotation completes one period of the stack
  - Compensation of individual emission profiles of the magnetrons by precalculating the orbital rotation profiles

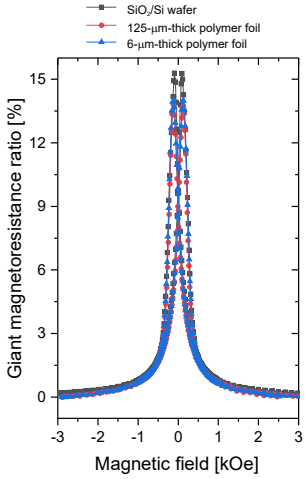


Application Example

- Manufacturing of GMR sensors by Helmholtz-Zentrum Dresden-Rossendorf (HZDR)
- Samples prepared on different substrate materials (rigid wafer and polymeric foils) lead to the same sensor performance



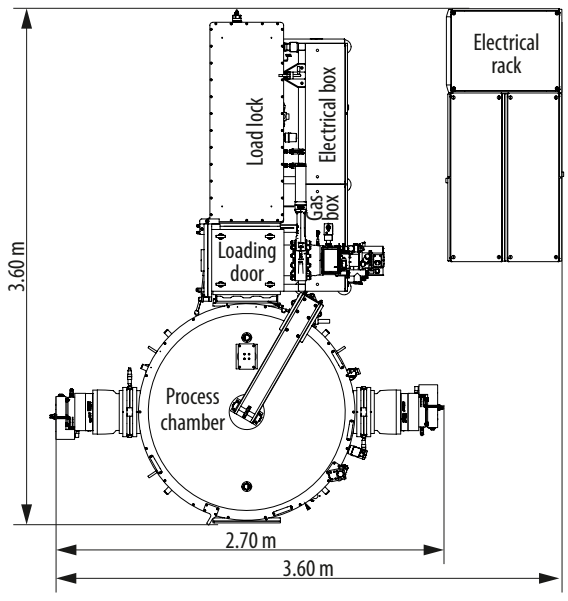
View of sensor under an angle with electron microscopy



Comparison of several magneto-resistance curves on different substrate types

Technical Data

Substrate size (up to)	300 mm dia.
Sputter source	4 rectangular magnetrons (400 mm x 90 mm)
Sputter modes	DC in cw or pulsed mode (1 kW) and/or RF (1 kW, 13.56 MHz)
Typical deposition rates	Cu: 43 nm/min, Co: 26 nm/min
Uniformity variation	< 0.6 % (σ/mean) over 300 mm dia.
Base pressure	< 8 x 10^{-8} mbar
System dimension (W x D x H)	3.60 m x 2.70 m x 2.30 m (without electrical rack and pumps)
Configuration	Single chamber with cassette load lock
Software interface	SECS II / GEM, OPC



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