Low Cost Lithography Tool For High Brightness LED Manufacturing

DOE Project: DE-EE0003302

Andrew M. Hawryluk, Ph.D.
Project Goal

The goal of this program was to modify a lithography tool used for semiconductor manufacturing to meet the cost and performance targets of the high brightness LED manufacturing industry.

At a high level, the goals of the program were:

• To reduce the cost of lithography exposures (cost of ownership),
• Reduce the capital equipment cost of the tool,
• Modify the tool to handler
• Improve the product yield
Approaches

- Reduced the Capital Equipment cost of the tool by ~30% through re-engineering
- Increase the tool throughput with
  - A higher brightness source
  - A faster theta-stage
  - A universal wafer-size capability
- Develop an IR off axis alignment system
- Develop an integrated system enclosure
- Develop a warped-wafer handling system