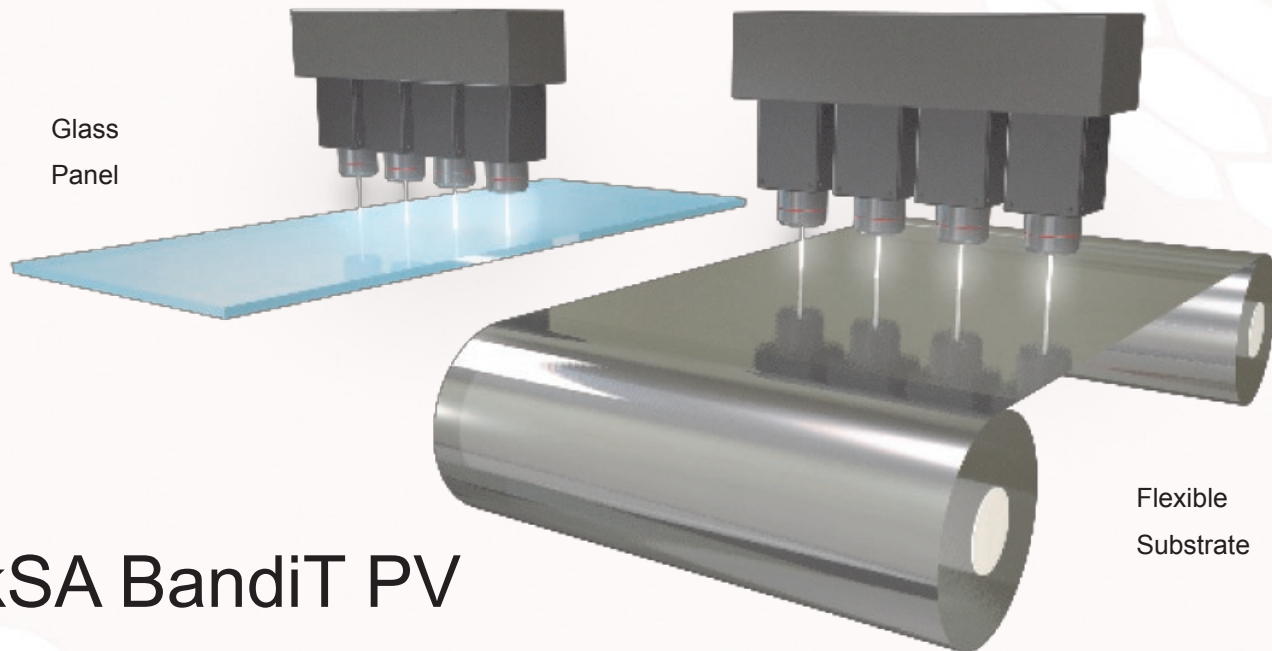




K-Space Associates, Inc.

Improve Efficiency

In-Line Process Monitoring
for CIGS, CdTe, CIS, Si, and III-V PV Materials



kSA BandiT PV

Today's **solar power generation industry** is quickly evolving. A key factor in producing the highest efficiency cells at the lowest manufacturing cost is the successful deployment of process control and optimization. k-Space addresses this need with our kSA BandiT PV systems.

Measure:

- Film thickness
- Surface roughness
- Absorption edge
- Panel/roll temperature
- Spectral reflectance, transmission and color spectrum

**“Measure Optical Properties
in Real-Time to Increase
Yield and Performance”**

The Technology:

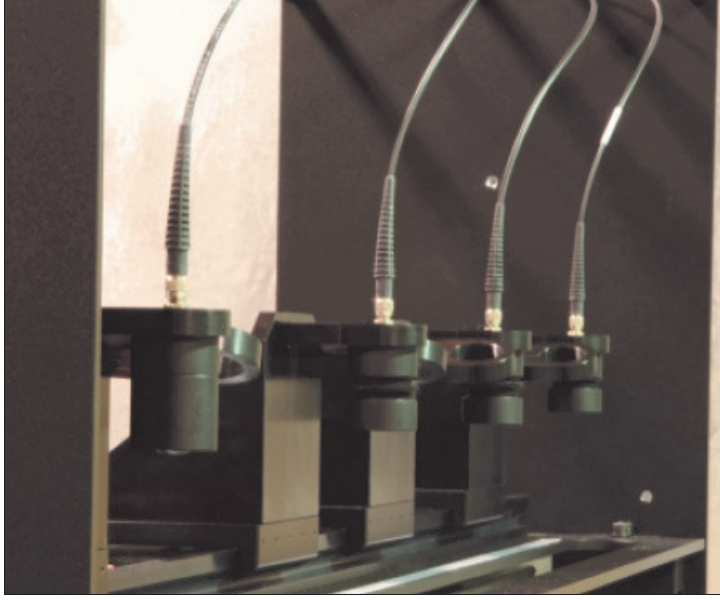
kSA BandiT PV spectrally analyzes light via solid state electronics to enable measurements over a wide spectral range. kSA patented broadband diffuse reflectance, broadband specular reflectance and broadband transmission measurement technologies can be incorporated into kSA BandiT PV systems to measure the parameters that are important to your photovoltaic process.

Customized Solutions Both In-Line and Off-Line:

- In-line probes
- Panel and wafer scanning
- Large area scanning



Improve Efficiency with kSA BandiT PV



Performance Specifications*

Parameter	Parameter Range
Optical Absorption Edge	480 -1625 nm (0.76 - 2.58eV)
Metal Film/Substrate Temperature	250 -1500 °C
Semiconductor Film/Substrate Temperature	RT - 700 °C
Film Thickness	0.4 -15 µm
Film Roughness	> 0.1% change

* Specifications are material and process dependent



Application Data Examples:

