

Introducing: **Zirconia Ribbon Ceramic**

Solid State & Thin Film Devices:

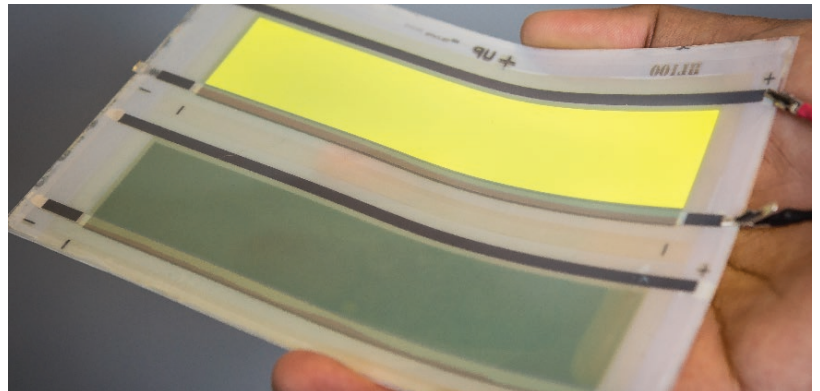
- No outgassing in vacuum chamber
- Higher temperature capable
- High purity ceramic
- Excellent water and air barrier
- Coatable by R2R processing
- Lightweight, low profile

Flexible Electronic Circuits or Sensors:

- Miniaturization & integration
- Coatable with thin & thick films
- Vias, holes, slots & other features
- Thermal shock tolerant
- No stretching during R2R processing

Mounting of hot chips:

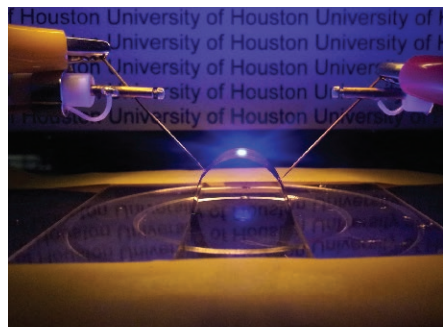
- Low thermal resistance
- Single or dual sided circuitry
- Chemical inertness
- Bendable for contoured shapes
- Translucent
- Wear resistant



*Thin E-Strate[®] improves light outcoupling of large area flexible OLED.
Photo Courtesy of Holst Centre*

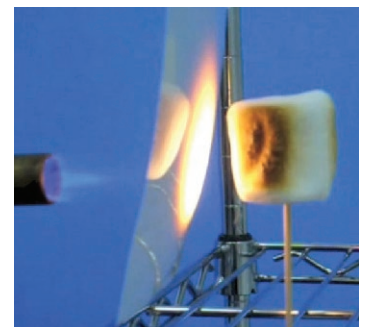


20 microns thick Thin E-Strate[®] wrapped around pencil



LED operating more efficiently and cooler on a flexed Thin E-Strate[®] substrate

Photo courtesy University of Houston



Marshmallow charred through Thin E-Strate[®] "window"

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Applications:

Thin film devices, portable electronics, solid state batteries, lightweight solar PV, durable labels, display backplanes, harsh environment sensors, heaters and bio-compatible devices.

Property		Measurement
Physical:	Material	3mol% Ytria-Stabilized Zirconia (3YSZ)
	Surface Roughness	20-25 nm
	Density	6.04 g/cm ³ , 99% dense
	Surface Energy	53.96 dyne/cm
	WVTR	1.5 ± 0.9x10 ⁻⁶ g/m ² /day (45°C/85%RH)
Mechanical:	Bend Strength	1.2 GPa, measured on 2 cm strip, 20 microns
	Compressive Strength	2500 MPa @ RT
	Fracture Toughness	7.0 MPa x m ^{1/2}
	Tensile Strength	248 MPa @RT
Thermal:	Processing Temperature	≤ 1200°C up to 2 hrs.
	Operating Temperature	Up to 1000°C
	Bulk Thermal Conductivity	2.7 W/mK
	Coefficient of Thermal Expansion	8.2ppm @ RT, 10.7 ppm @ 1000°C
Electrical:	Dielectric Constant	28 @ 2.6 GHz
	Dielectric Strength	3200 VDC @ 40µm, 2500 VDC @ 20µm (R.T.)
	Df	0.0048 @ 2.6 GHz
Optical:	Translucent	15% dispersive @ 40 microns
	IR Transparent	80% between 2-7 nm

Thin E-Strate[®] Substrate Evaluation Kits Available for Purchase Online (www.enrg-inc.com)

- 8-pack of 27 mm x 47 mm
- 7-pack of 25.4 mm x 55.88 mm
- 4-pack of 50 mm x 50 mm
- 1-pack of 100 mm diameter "wafer"
- 1-pack of 100 mm x 100 mm

For shipments outside the U.S., please contact ENrG Inc. for a quote.



Contact Us Regarding Your Custom Requirements or ≤ 35 mm width ribbons

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