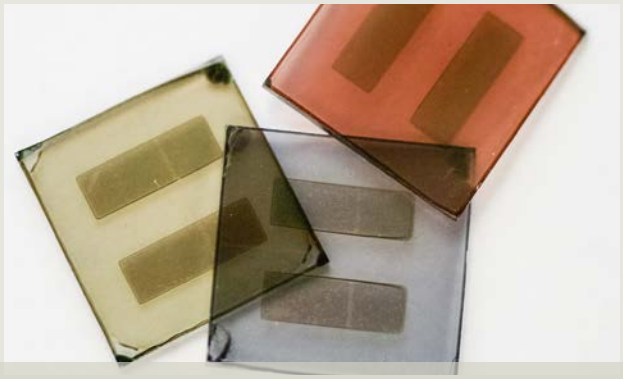
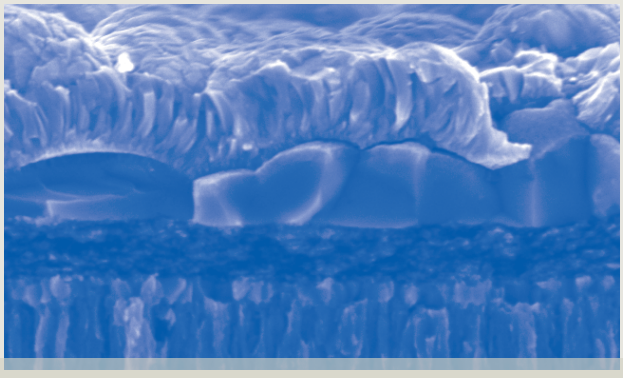
// ZSW PV Materials Research: Printable solar cells and new materials

// Solutions for solar cells based on organic or inorganic absorber materials



// Semitransparent & tandem cells



// Low-cost, highly abundant material $Cu_2ZnSn(S,Se)_4$ (SEM cross-section)

Printable low-cost solar cells:

ZSW develops organic and inorganic solar cells: vacuum-free, low-cost, solution-processible.

Organic solar cells:

// On glass and flexible substrates:
Potentially cheap materials, no vacuum processes and no high temperatures needed
→ Status: ~ 7 % cell efficiency (glass)

// Semitransparent cells with various colours:
New fields of applications (window integration etc.)
→ Status: ~ 5 % cell efficiency (glass)

// Tandem cells:
Stacked layers for expanded spectral range
→ Status: ~ 7 % cell efficiency (glass)

High-efficiency materials: $Cu(In,Ga)Se_2$

// Transfer high efficiency to low-cost production methods:
Highest potential of all thin-film materials

// Vacuum-free selenization of printed precursor layers
→ Status: > 11 % cell efficiency

Abundant, low-cost materials: $Cu_2ZnSn(S,Se)_4$

// Similar to CIGS, but based on low-cost, abundant, non-toxic elements. Next generation?

// Vacuum-free selenization of printed precursor layers
→ Status: > 10 % cell efficiency

Perovskite material

// Wide gap material for use in tandem solar cells with CIGS or CZTS

Contact
Claudia Brusdeylins
+49 (0)711 7870-278
claudia.brusdeylins@zsw-bw.de

2014-08

Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg
Certified according to DIN EN ISO 9001:2008
www.zsw-bw.de