

CELL

COLOR

TEXTURE

SHAPE & SIZE



MODULE

COMPOSITION

FRAMING

ADDED ELEMENTS

SHAPE & SIZE

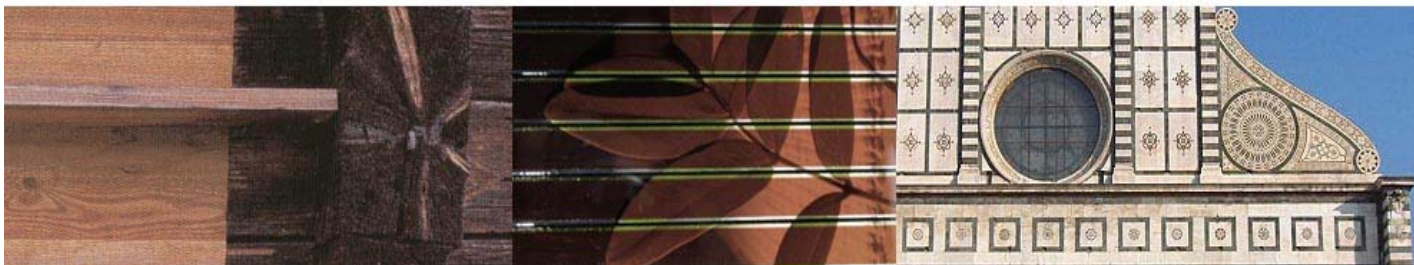
OVERALL

DETAILING



BUILDING

FIELD SIZE & POSITION



TECHNICAL DEVICE



BUILDING COMPONENT

Added to the building

Integrated into the building design



Paul-Horn Arena, Tübingen, Germany

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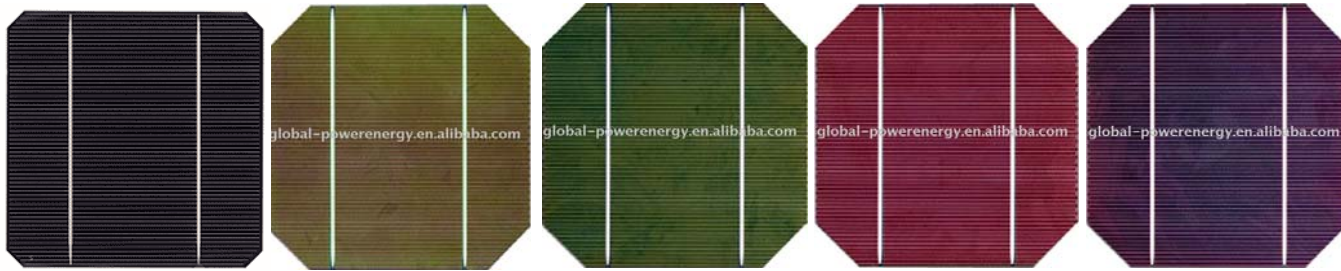
OVERALL

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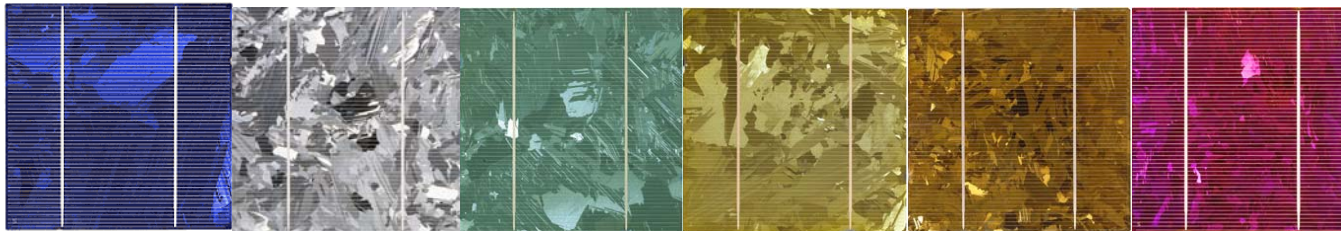
FIELD SIZE & POSITION

MONOCRYSTALLINE CELLS



<http://global-powerenergy.en.alibaba.com/>

POLYCRYSTALLINE CELLS



<http://www.sunways.eu>

Photovoltaic cells have a variety of possibilities in color on the market by adding an antireflection layer on the original cell.

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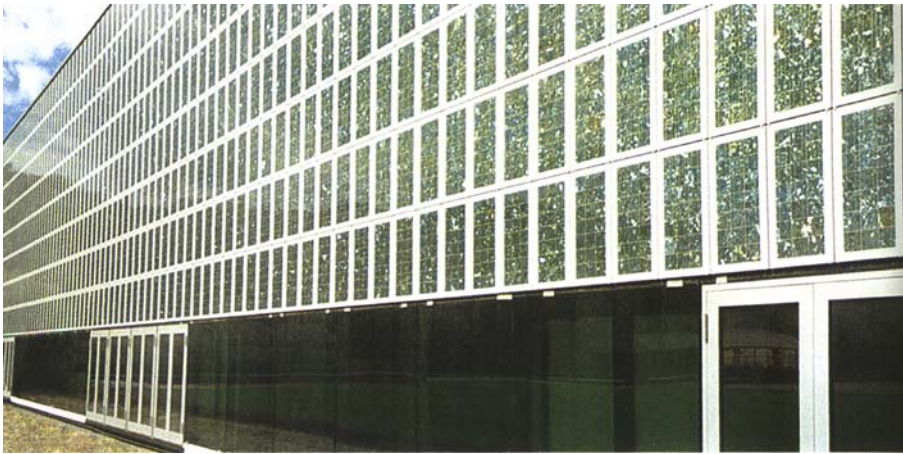
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Paul-Horn Arena, Tübingen, Germany



Tourist Office, Ales, France



Tourist Office, Ales, France

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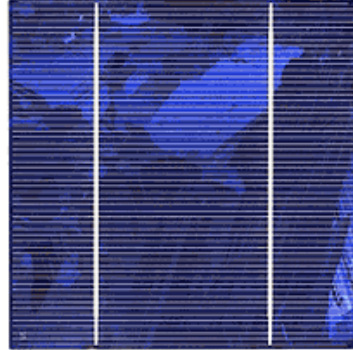
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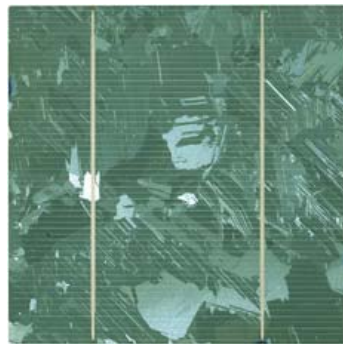
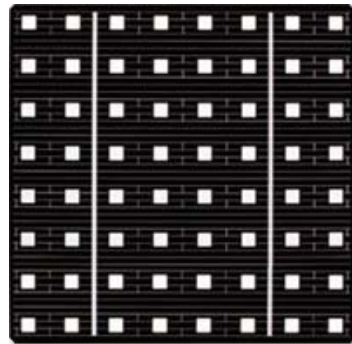
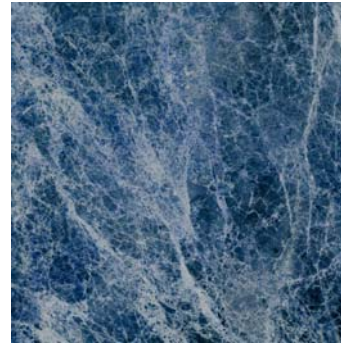
MONOCRYSTALLINE CELLS



POLYCRYSTALLINE CELLS



POLISHED MARBLE



<http://www.sunways.eu>



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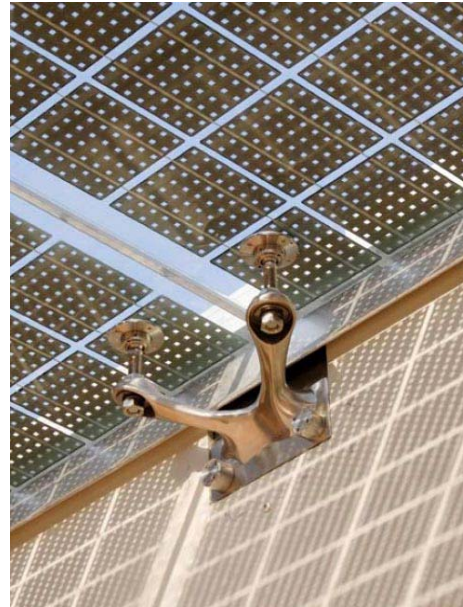
BUILDING

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The cells texture depends on the different technology. Monocrystalline cells have a more solid, while poly-, multicrystalline cells have a marble-like texture.



Zara Fashion Store, Cologne, Germany



Solar Pavilion for Solar Dechatlon, TU Darmstadt



Zara Fashion Store, Cologne, Germany

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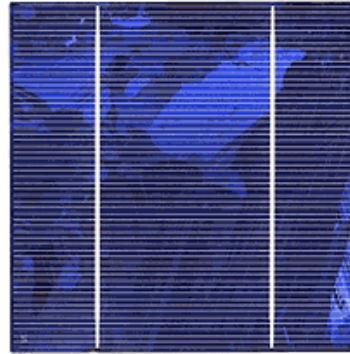
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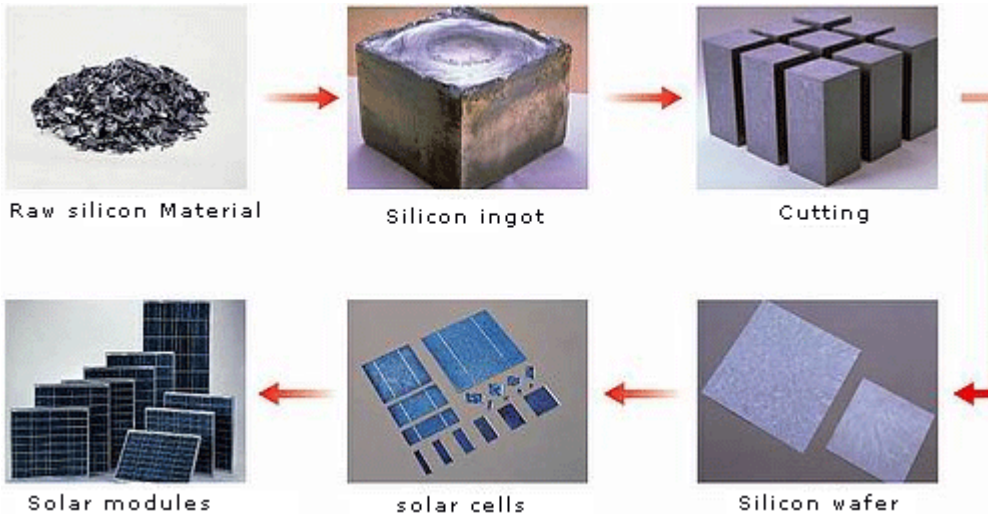
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<http://solarphotovoltaic.blogspot.com/>

Monocrystalline silicon wafers are cut from cylindrical ingots, they have an original round shape, while multicrystalline ones are cut from cast-square ingots, therefore have an original quadratic shape.



Opera House, Oslo, Norway



Paul-Horn Arena, Tübingen, Germany

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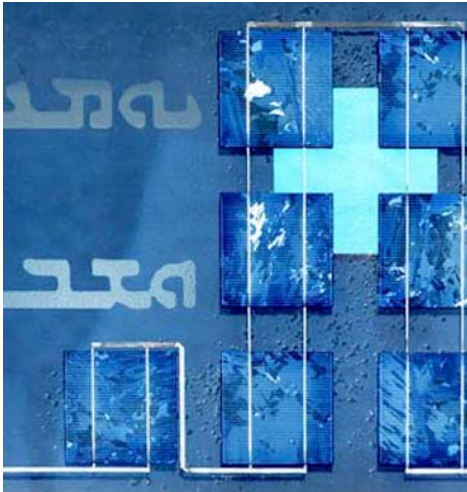
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Wind Tower, UBC, Vancouver, Canada



Opera House, Oslo, Norway



GreenPix Ledwall, Beijing, China

The composition (pixelling) of the wafer-based solar cells (that has a size of 10/10 or 12/12 cm) or smaller thin film modules can create different patterns on the facade.

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GreenPix Ledwall, Beijing, China



BP Solar Skin, NTNU, Trondheim, Norway



Paul-Horn Arena, Tübingen, Germany

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The most common frames of modules are made of aluminium. Modules can be integrated into curtain-wall systems as well. There is also possibility for frameless modules to match architect's needs.



GreenPix Ledwall, Beijing, China



Valby Gable, Copenhagen, Denmark



Wind tower, UBC, Vancouver, Canada

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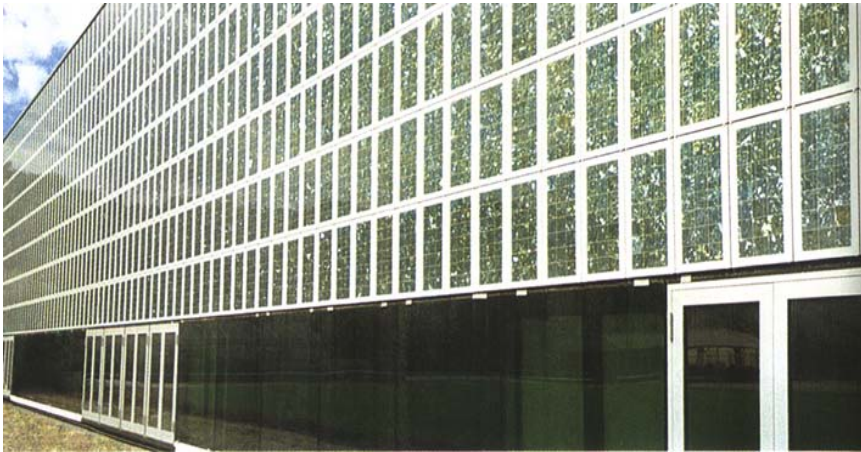
BUILDING

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Certain added elements can enhance the façade design. These can be in front, in the level, or behind the surface of the PV modules. Some examples are glass painting, different lightning systems (LED)...etc.



Opera House, Oslo, Norway



Paul-Horn Arena, Tübingen, Germany



Zara Fashion Store, Cologne, Germany

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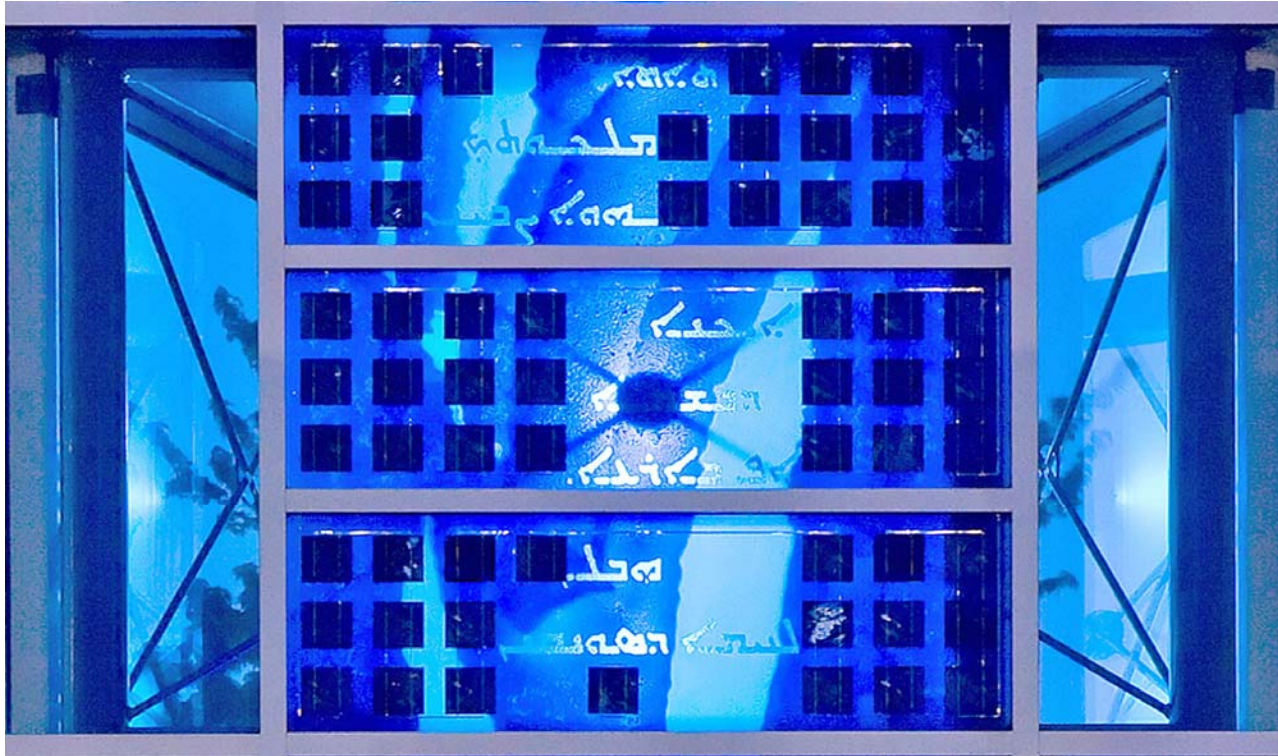
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The characteristics of the cells, the framing and the added elements together with the conceptual grid of the façade define the shape and size of the module.



Wind Tower, UBC College, Vancouver, Canada

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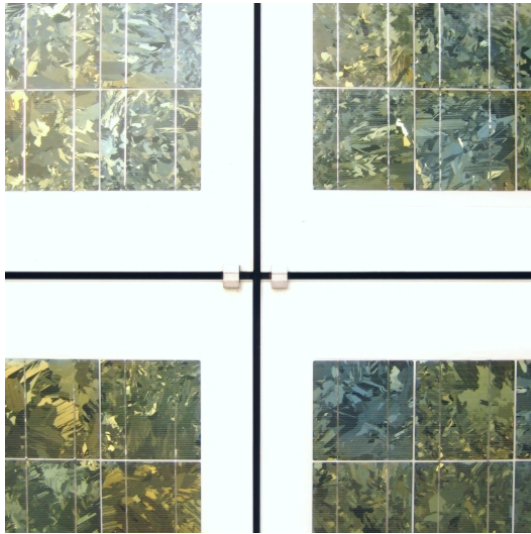
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The characteristics of the cells, the composition of the cells, the framing, the added elements and the shape and size of the module create an overall design of the component.



Paul-Horn Arena, Tübingen, Germany



BP Solar Skin, NTNU, Trondheim, Norway



Opera House, Oslo, Norway

The mounting and jointing, the electric wiring and connections to other components of the façade provide a variety of structural detailing issues.

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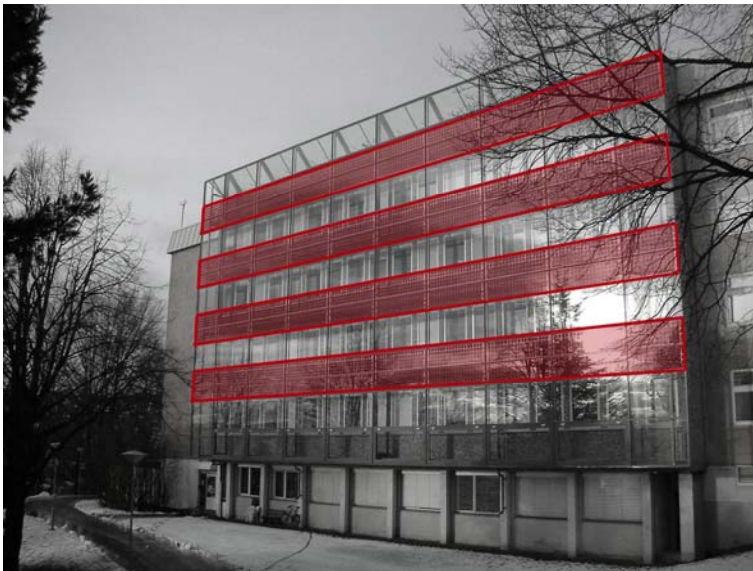
DETAILING

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Electric Building 1, Gløshaugen, NTNU, Trondheim, Norway
Original building



Electric Building 1, Gløshaugen, NTNU, Trondheim, Norway
After the integration of BP Solar Skin

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This issue discusses whether the formal and conceptual positioning and the size of the PV modules match the formal design and composition of the overall project.



Paul-Horn Arena, Tübingen, Germany - Entrance



Paul-Horn Arena, Tübingen, Germany – Southern facade with integrated PV

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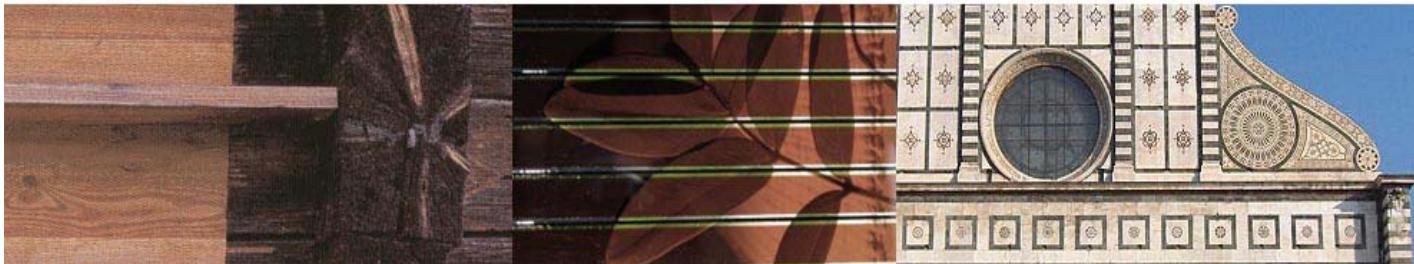
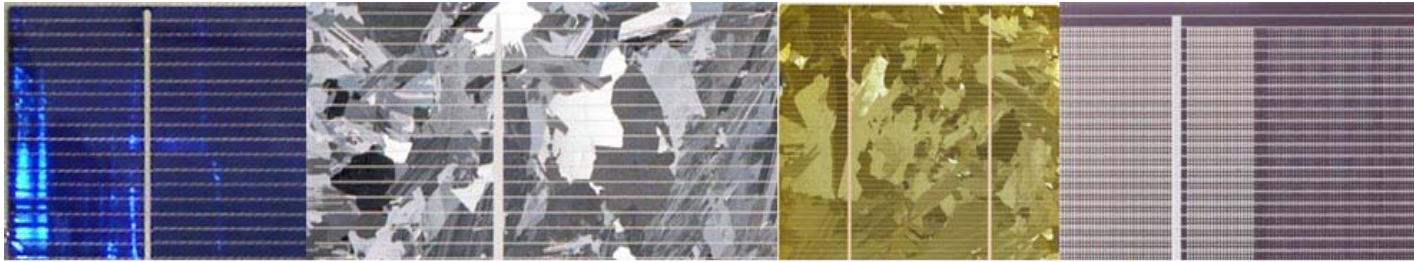
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Thank you for your attention!



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