

## SELLER

Ahura Energy, Inc.

## TITLE

Improved manufacturing of solar power technology

## FEATURED PATENT NUMBER

5,725,659

## RELATED IP

08/322,292; 11/559,893; 11/740,286; PCT/US07/82310

## LOT SUMMARY

The offered patent asset is directed to the field of very low cost and high quality deposition of semiconductor material for various solar, light emitting diode, radio frequency, wireless, microwave and detector applications. This novel solid phase epitaxial (SPE) deposition process has been successfully applied to semiconductors such as Cadmium Telluride (CdTe), Copper Indium Gallium Diselenide (CIGS), Gallium Arsenide (GaAs), Ge, Si, GaP, GaAsP, InP, InAs, ZnS, ZnSe, ZnTe, CdS, CdSe, SiC, HgCdTe, SnTe, Zn<sub>3</sub>P<sub>2</sub> and CuInS<sub>2</sub>.

Epitaxy is a process where a material is deposited using gaseous or liquid precursors to form a crystalline structure on a substrate. Epitaxy has many established uses in industry. It has uses in nanotechnology and semiconductor manufacturing where it provides a cost effective way of growing semiconductors with compounds such as Cadmium Telluride (CdTe) and Gallium Arsenide (GaAs).

The present disclosed invention presents a deposition process using solid phase epitaxy for growing uniformly thick and thin layers of material. Source material from the source wafer is deposited by a transport agent vapor on a substrate wafer in a reaction chamber.

There are many benefits of using the process disclosed in this invention. This process leads to faster growth and has less material loss. The solid phase epitaxy described in this patent can be carried out at atmospheric pressures and moderate temperatures and does not rely on toxic or corrosive gases. This patent presents a more efficient and environmentally safe method for manufacturing semiconductors. The process can be used with many types of semiconductors and has applications in a variety of fields including the cost-effective production of solar power systems cells.

## SAMPLE FORWARD CITATION ANALYSIS

- Universite Pierre Et Marie Curie

## POTENTIAL LICENSEES

- Nanotechnology Researchers and Developers
- Semiconductor Researchers and Developers
- Solar Power Systems Providers

## INQUIRE REGARDING EXPECTED VALUE

## PATENT NUMBER

5,725,659

## INVENTOR

Fareed Sepehry-Fard

## TITLE

Solid phase epitaxy reactor, the most cost effective GaAs epitaxial growth technology

## ISSUE DATE

March 10, 1998

## EARLIEST FILING DATE

October 3, 1994

## REPRESENTATIVE INDEPENDENT CLAIM

A deposition process for growing uniform thickness layers of material, comprising: disposing a source wafer and a substrate wafer substantially parallel to one another within a reaction chamber, said source wafer comprising said material; providing a transport agent vapor in said chamber substantially at atmospheric pressure; causing said vapor to flow substantially evenly across said wafers; setting a space between said source wafer and said substrate wafer to less than a mean free path of a reactive species of oxido-reduction of said material; heating said source wafer and said substrate wafer substantially evenly with a difference in temperature between said source wafer and said substrate wafer; and maintaining said temperature difference between said source wafer and said substrate wafer to effect deposition of said material transported from said

source wafer to said substrate wafer as a result of oxidoreduction reaction of said material, said vapor and said substrate.

