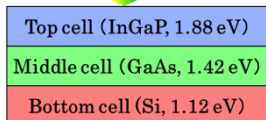
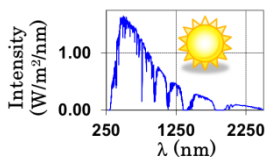


### 【研究的目标 (Target)】

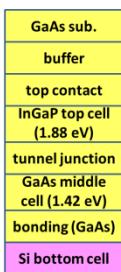
本研究项目之目标是为了降低太阳光发电的发电成本, 实现高效率、低成本的太阳能电池。通过用Si单元与III-V单元进行贴合去实现转换效率>30%的3接合单元。

The purpose of the work is to realize high-efficiency and low-cost solar cells so as to reduce the cost of photovoltaics. Efficiencies > 30% are targeted in triple-junction cells fabricated by bonding Si- and III-V cells.

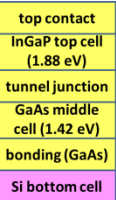
### 【研究的概要: 串联式太阳能电池 (Outline: Tandem cells)】



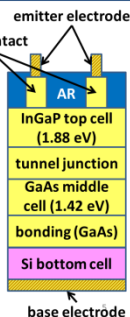
- 为了降低太阳光发电的成本, 需要我们去实现高效率、低成本的太阳能电池。
- 目标: InGaP/GaAs/Si 串联式太阳能电池。效率理想值 = 36%。出路: 自立分散式能源框架。
- High-efficiency and low cost cells required.
- Target: InGaP/GaAs/Si tandem cells. Ideal efficiency = 36%.
- Exit: Decentralized energy infrastructures.



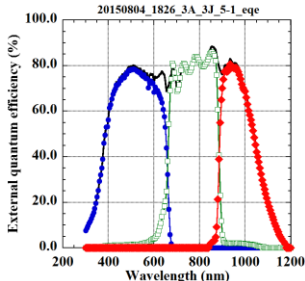
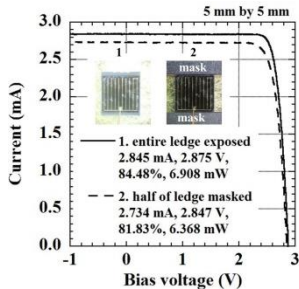
sub. & buffer etched



device process



- 通过异种材料的常温接合来制作 InGaP/GaAs/Si 3接合单元。
- InGaP/GaAs/Si triple-junction cells fabricated by room-temperature bonding of dissimilar materials.



- 达到的转换效率 ≈ 26%。
- Si单元的性能(光电流)限制了3接合单元的特性。所以要对Si单元的构造进行修正。
- Achieved efficiency ≈ 26%.
- Limited by performances (photocurrent) of Si cells whose structures should be improved.