

Choongman Moon¹, Shiyu Gan², Hoà Lê Thanh³, Dowon Bae⁴, Brian Seger¹, Peter C.K. Vesborg¹, Ole Hansen³, Ib Chorkendorff¹

¹ Department of Physics, Technical University of Denmark, DK-2800 Kgs. Lyngby, Denmark.

² Center for Advanced Analytical Science, c/o School of Chemistry and Chemical Engineering, Guangzhou University, Guangzhou 510006, PR China

³ Department of Micro- and Nanotechnology, Technical University of Denmark, DK-2800 Kgs. Lyngby, Denmark.

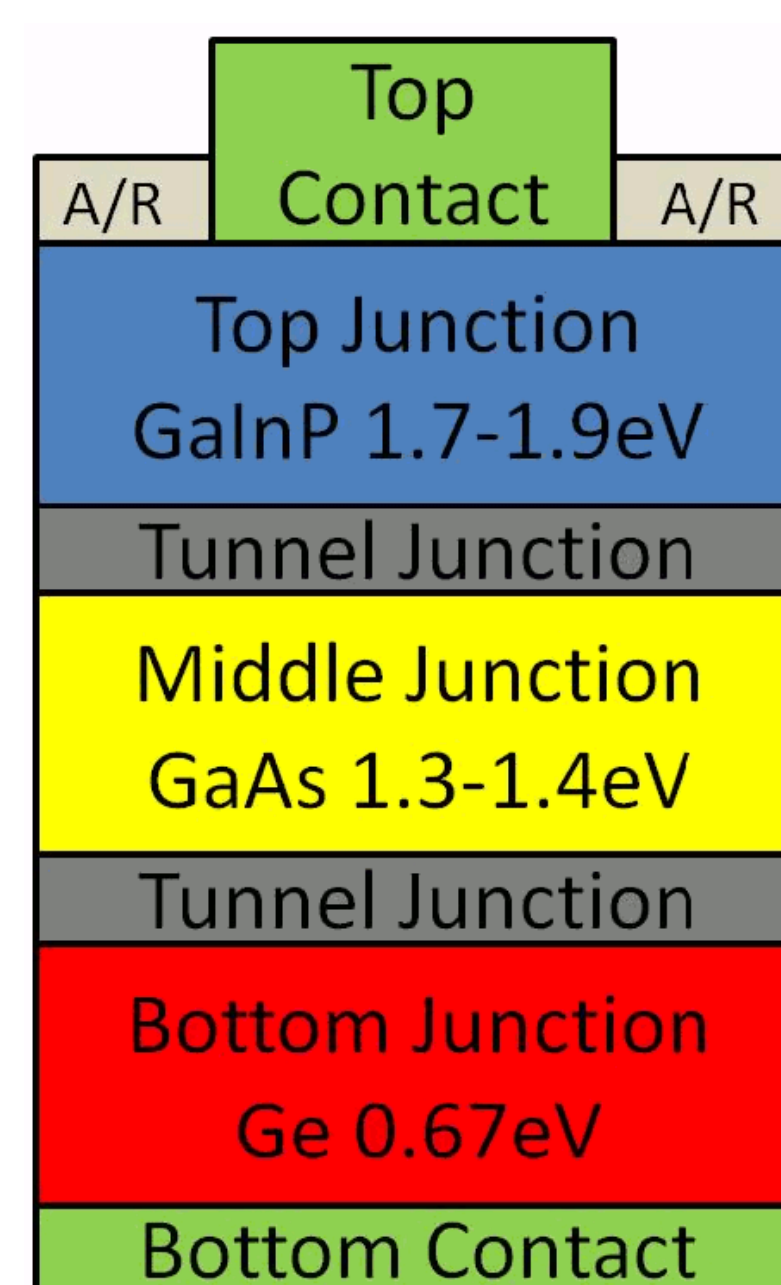
⁴ Material for Energy Conversion and Storage (MECS), Department of Chemical Engineering, Delft University of Technology

Introduction

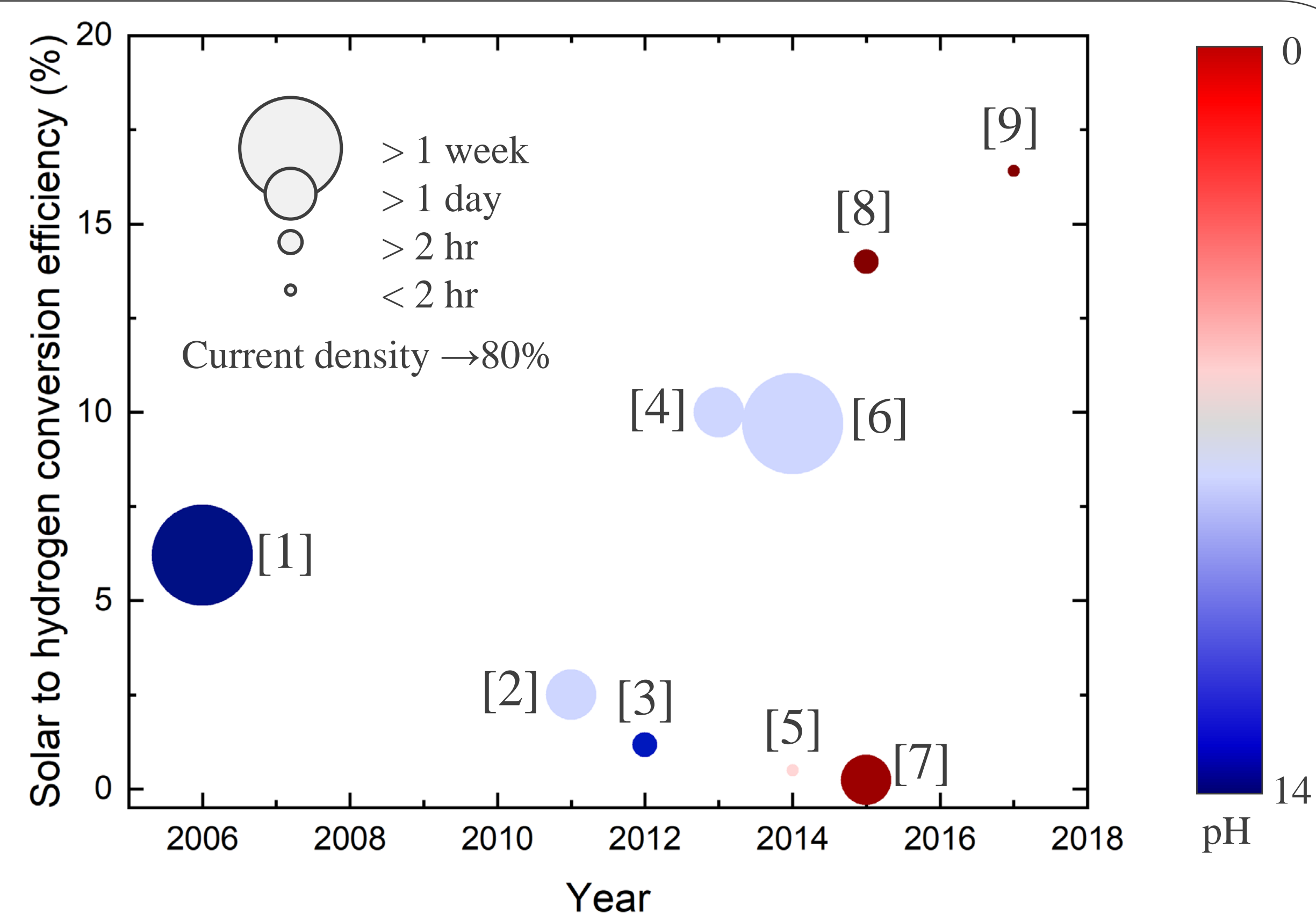
Solar water splitting can provide a sustainable way to produce hydrogen.

For solar to hydrogen (STH) conversion, it is essential to make stable and efficient STH device.

Triple junction solar cell (TJS) is adopted for efficient light harvesting, and they are protected by TiO₂ for enhancing stability.

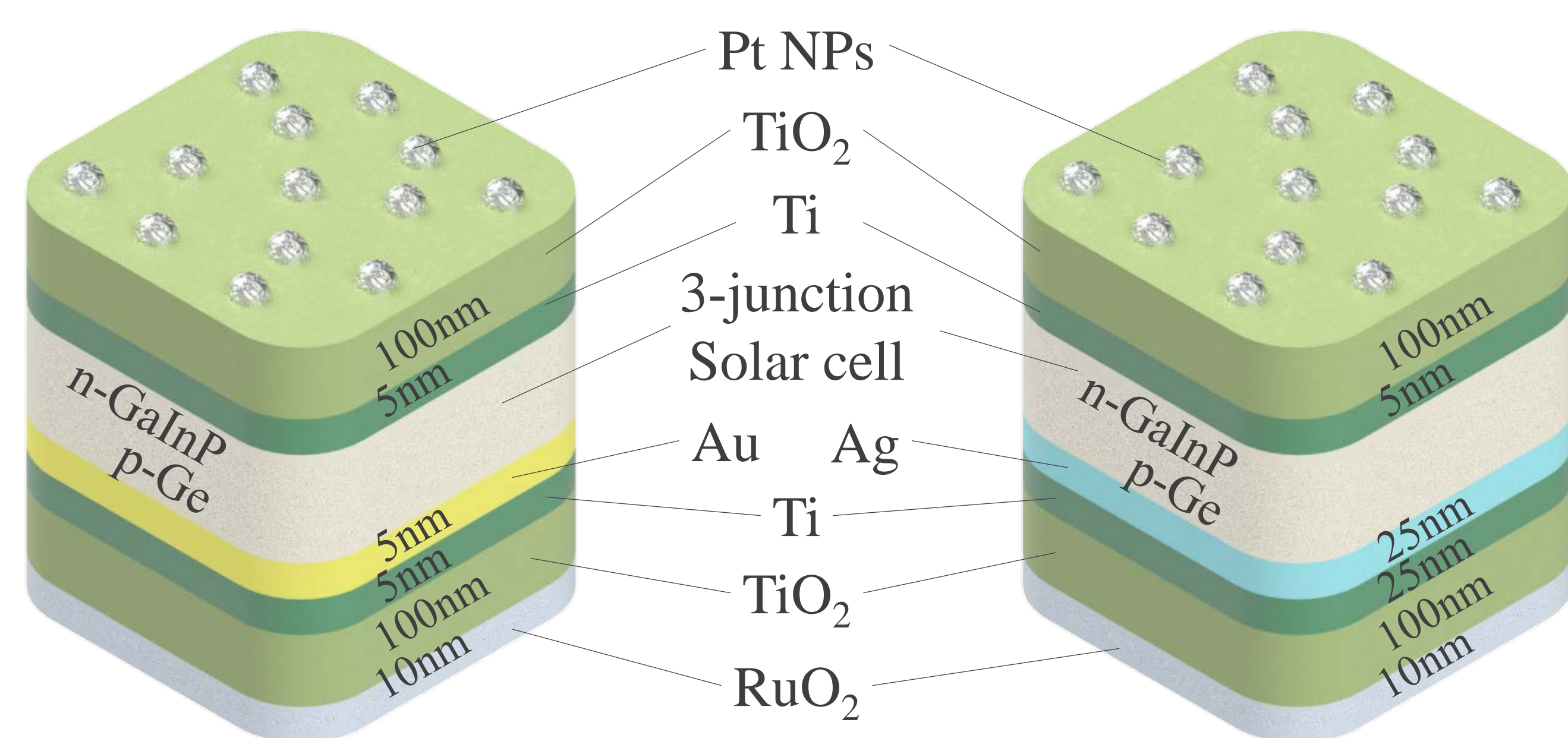


$V_{OC} = 2.69V$
 $J_{SC} = 14.7 \text{ mA/cm}^2$
 $FF = 86.0\%$



Sample preparation

Both sides of TJS are covered by electrical contact, TiO₂ protection layer and OER/HER catalyst



Gold or silver are used as an electrical contact on Ge.

I-V Curve

I-V curve is measured using a pogo-pin on TiO₂

Gold contact

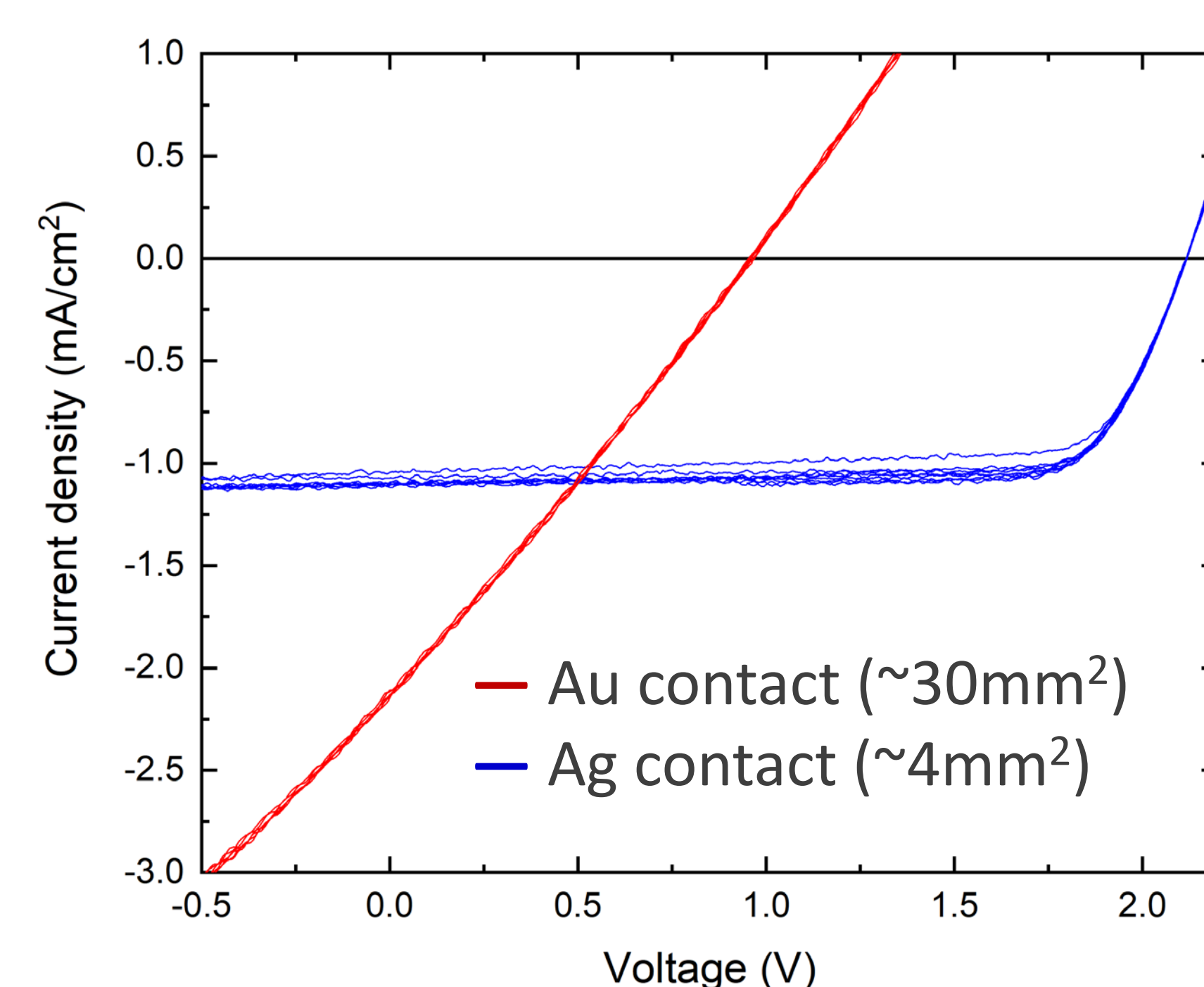
$V_{OC} = 1.2V$

F.F. = 61%

Silver contact:

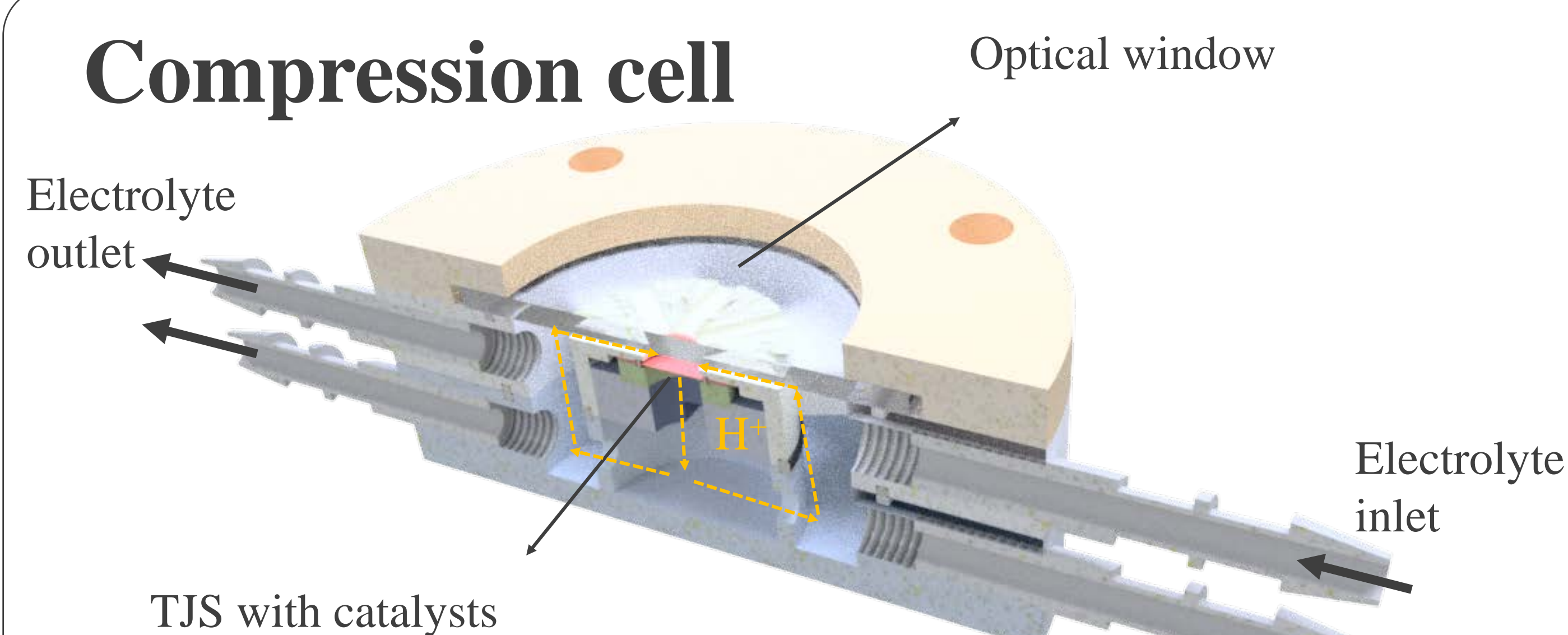
$V_{OC} = 2.12V$

F.F. = 89%



Ag contact on Ge side can provide high photovoltage and fill-factor compared to Au contact.

Compression cell



Conclusion

- Ag and Au are tested as a electrical contact.
- Ag gives better photovoltage and fill-factor in I-V curve.
- After solving stability issue, it would be able to realize highly efficient STH conversion device.

Reference

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