



Polymer for opto-electronic applications

## Description

**Poly[bis(4-phenyl)(2,4,6-trimethylphenyl)amine]-end capped PTAA**, an highly performant hole-transporting, electron-blocking semiconducting polymer that improves open-circuit voltage (Voc), fill factor (FF) and overall performances of various solar cell systems.

PTAA as HTL in perovskite solar cells achieving high power conversion efficiencies (PCE). PTAA displays superior mechanical robustness in terms of cohesion with a cohesion energy (Gc) coefficient over 17 J m<sup>-2</sup>, the highest reported Gc value among HTL materials.

## The Polyrium Difference by Solaris

### POLYRIUM™ – PTAA Advantages:

- Various Mw ranges available (5 kDa to 1000 kDa) to fit your formulations, device fabrication processes and methods (Custom Mw available).
- High Molecular weight (Mw), soluble and processable PTAA [1].
- **End-capped** to limit any side photo-reaction during device operation.
- Fully scavenged using our proprietary scavenging and cleaning methods to yield ultra low metal content, pale yellow powders and fibres for longer terms device stability.
- High film strength without sacrificing performances and Power Conversion Efficiency (PCE) [2].
- Available on the kilo level and ready for pilot plant and commercial device fabrication.
- Specific Polyrium batches with precise Mw and pdi available (Mw Polyrium batches).

[1] Solubility may vary depending on Mw, processing temperature and solvents used.

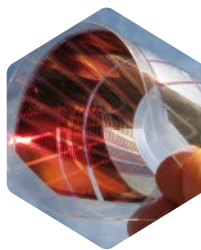
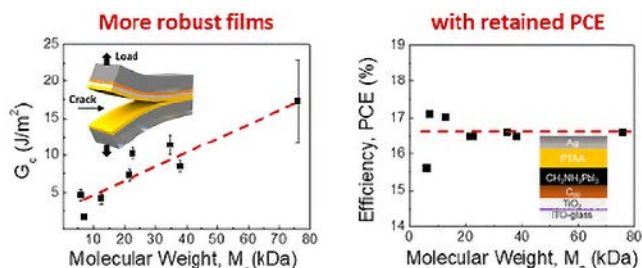
POLYRIUM™ by Solaris Chem Inc.

Available at **g level** (Tech centers and universities) and Available at **kg level** (for industrial developments).

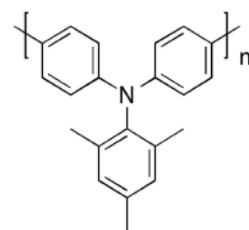
## References

### [1][2] "Hole-Transport Layer Molecular Weight and Doping Effectson Perovskite Solar Cell Efficiency and Mechanical Behavior".

Inhwa Lee, Nicholas Rolston, Pierre-Louis Brunner, Reinhold H. Dauskardt\*  
Appl. Mater. Interfaces 2019, 11, 26, 23757–23764  
DOI: 10.1021/acsami.9b05567



Flexible Solar Cell incorporating PTAA



PTAA (p-type)

### SOL2426

Various Mw ranges and specific Mw Polyrium batches available to fit your formulations, device fabrication processes and methods (Mw available from 5 kDa to 1000 kDa).

Buy now

Polyrium batches



Green chemistry



Environmentally friendly

SUSTAINABILITY is at the core of what we do and our engine for growth, which is why we prioritize the use of GREEN CHEMISTRY, avoid wastes, recover and recycle solvents and materials as much as possible and use renewable hydro-electrical energy to power our operations.



High Mw PTAA fibers



PTAA self supported thin film

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## Fluoro-PTAA

Polymer for opto-electronic applications

### Description

**Poly[bis(4-phenyl)(4-fluoro-2-methylphenyl)amine]** is one of the family members of poly(triaryl)amine, closely related to PTAA but with a deeper HOMO energy level of -5.52 eV (vs -5.14 eV for PTAA).

F-PTAA as HTL in perovskite solar cells achieving high power conversion efficiencies (PCE). F-PTAA displays a deeper HOMO level than PTAA, allowing to fine tune work functions of photovoltaic systems.

### The Polyrium Difference by Solaris



#### Fluoro-PTAA Advantages:

- Various Mw ranges available (5 kDa to 200 kDa) to fit your formulations, device fabrication processes and methods (Custom Mw available).
- High Molecular weight (Mw).
- Excellent semiconductor material that transports holes and blocks electrons due to its electron-rich components..
- The use of this polymer can significantly improve the open-circuit voltage (VOC) and the fill factor (FF) of the cells in high-performance perovskite solar cells.
- Fluoro-PTAA can be coated as a substrate material used for hole transport in the manufacture of many devices such as perovskite solar cells, organic light-emitting diodes (**OLED**) and **organic field-effect transistors**.
- Specific Polyrium batches with precise Mw and pdi available (**Mw Polyrium batches**).



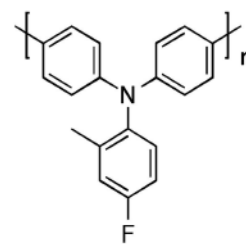
by Solaris Chem Inc.

### References

**“Sequentially Fluorinated PTAA Polymers for Enhancing VOC of High-Performance Perovskite Solar Cells”.**

Youngwoong Kim, Eui Hyuk Jung, Geunjin Kim, Donguk Kim, Bumjoon J. Kim, and Jangwon Seo\*

DOI: [10.1002/aenm.201801668](https://doi.org/10.1002/aenm.201801668)



Fluoro-PTAA  
SOL2446

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High Mw Fluoro-PTAA fibers

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