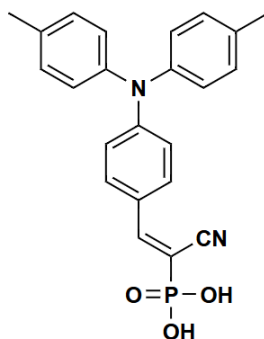


Organic Nano Electronic (ONE=1) Materials for those who understand quality

## CERTIFICATE OF ANALYSIS

1M Material: Self-Assembly Molecule, SAM0404  
Common Name: MeTPA-CPA  
Other Name: DN-X38  
Chemical Name: (E)-(1-cyano-2-(4-(di-p-tolylamino)phenyl)vinyl)phosphonic acid  
Molecular Weight: 404.4  
Chemical Structure:



Lot No.: SC4023F3  
Appearance: While to beige solid  
Solubility: Soluble in Methanol, THF, DMF, DMSO and other selected solvents  
Assay: 99% (by NMR)  
Reference: DOI: 10.1126/science.adg3755

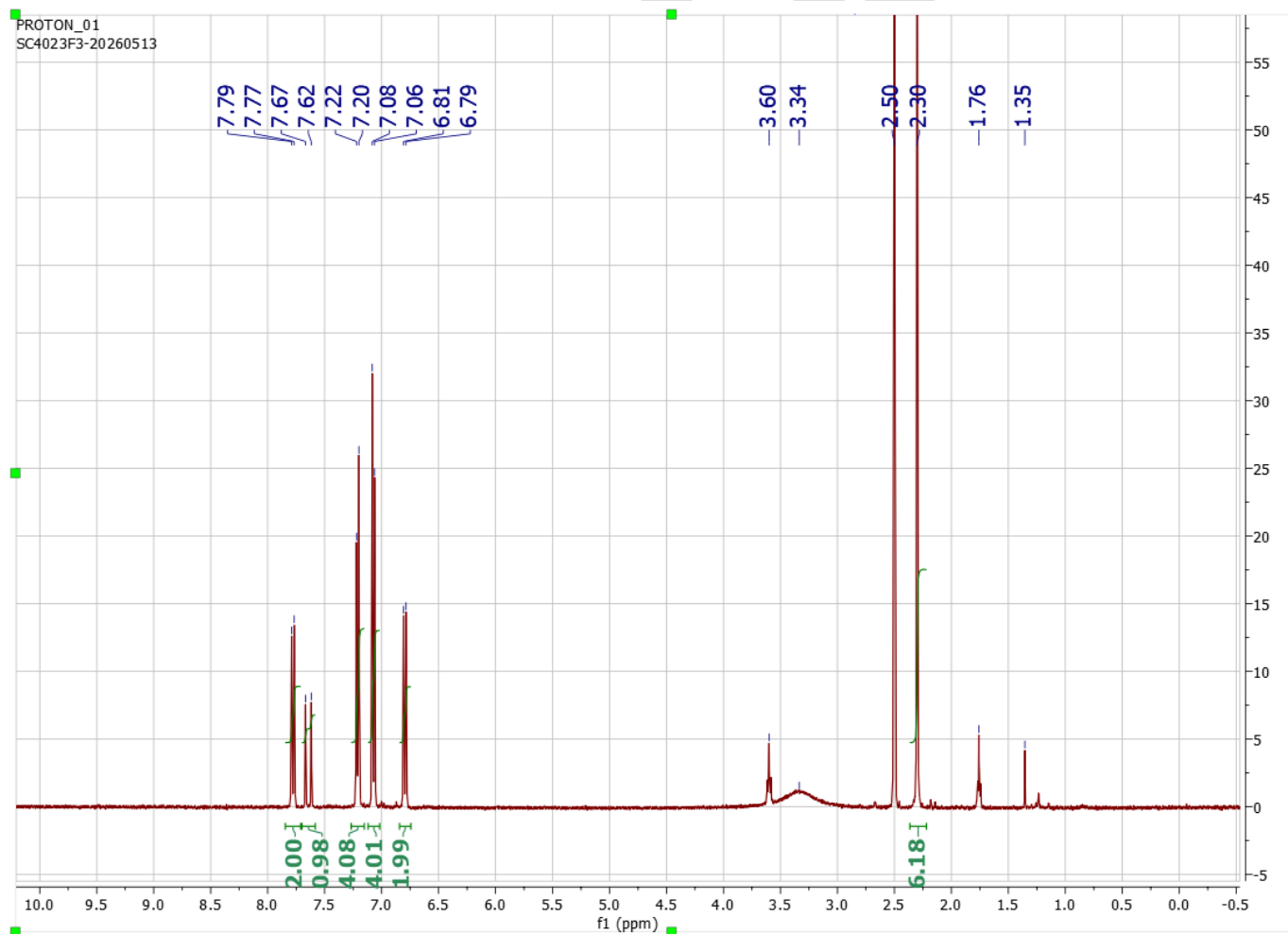
Minimizing buried interfacial defects for efficient inverted perovskite solar cells

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## Editor's summary

Many of the hole-transport materials used in inverted perovskite solar cells are either too hydrophobic to wet perovskite precursors or can react with the perovskite, which causes the buried interface between these layers to develop performance-limiting defects. Zhang *et al.* report that an amphiphilic molecular hole transporter with a hydrophilic cyanovinyl phosphonic acid (CPA)-anchoring group and a hydrophobic arylamine-based hole-extraction group (MPA-CPA) minimized the buried interfacial defects by enhancing perovskite deposition through wetting and passivation. The perovskite films had high uniformity, high photoluminescence quantum yield, and long carrier lifetimes. Encapsulated 1-square-centimeter solar cells had a power conversion efficiency of 23.4% and high operational and damp heat test stability. —Phil Szuromi

## NMR for internal reference ONLY:



(Note: Trace THF)

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