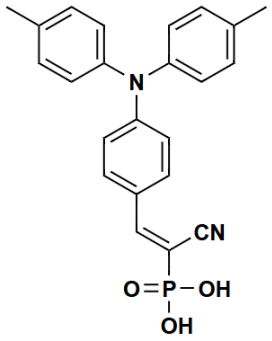
1-Material Inc
2290 Chemin St-Francois
Dorval, Quebec
H49P 1K2, Canada

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:	

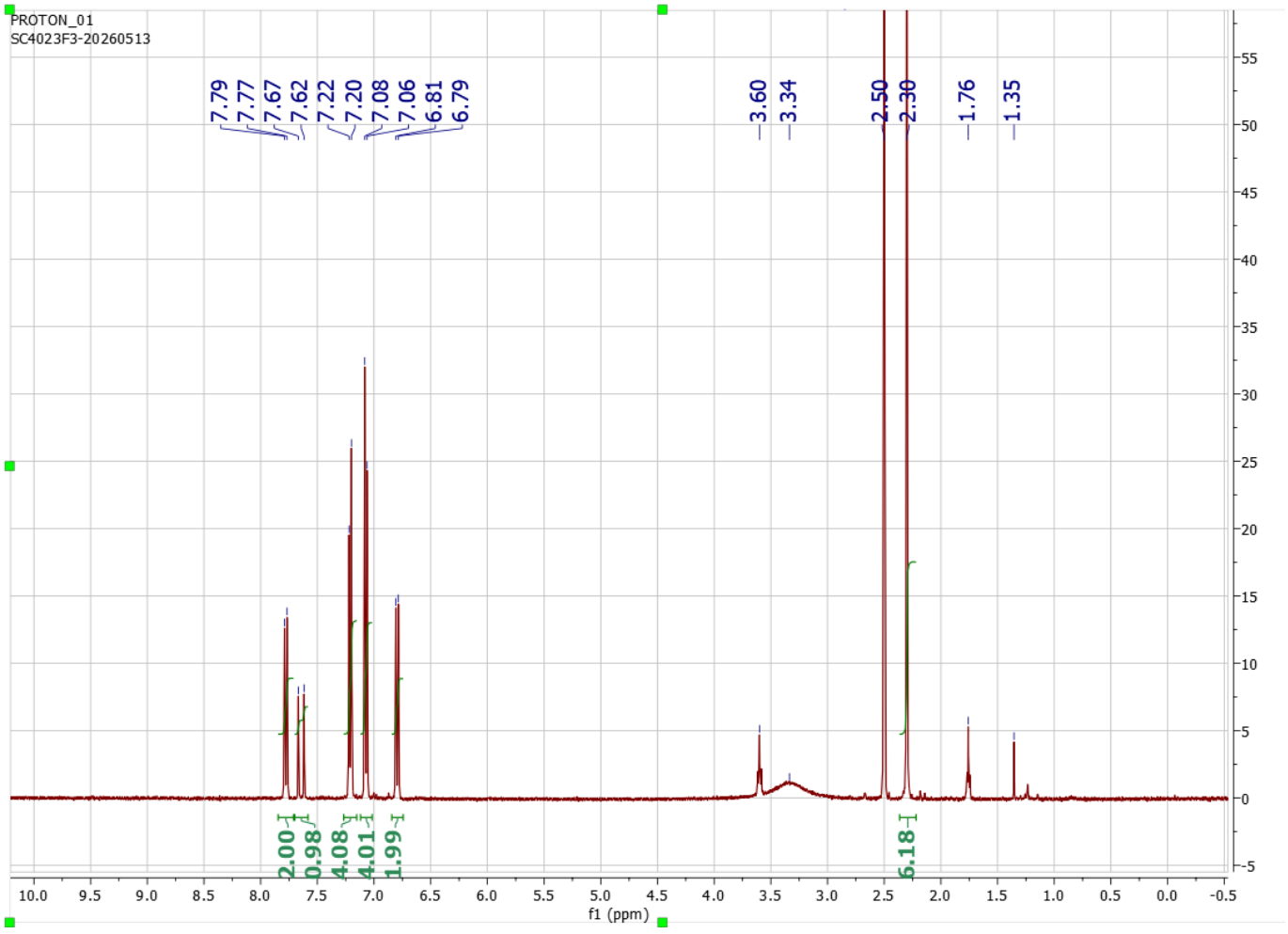


Lot No.:	SC4023F3
Appearance:	While to beige solid
Solubility:	Soluble in Methanol, THF, DMF, DMSO and other selected solvents
Assay:	99% (by NMR)
Reference:	DOI: 10.1126/science.adg3755
	Minimizing buried interfacial defects for efficient inverted perovskite solar cells

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)