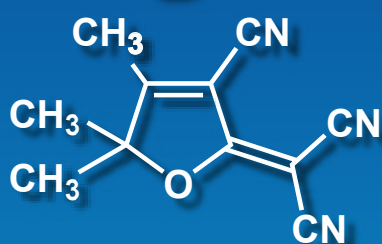


New

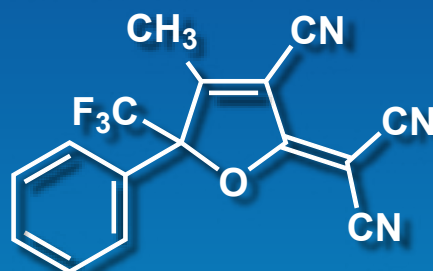
MATERIALS

TCI

# Strong Electron-Accepting Building Blocks for Organic NLO Materials



2-[3-Cyano-4,5,5-trimethylfuran-2(5H)-ylidene]malononitrile  
1g  
[C3791]

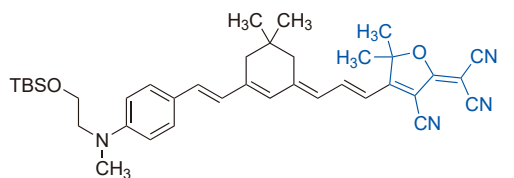
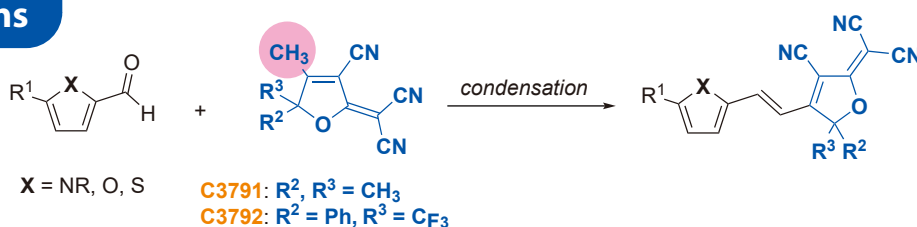


2-[3-Cyano-4-methyl-5-phenyl-5-(trifluoromethyl)furan-2(5H)-ylidene]malononitrile  
1g  
[C3792]

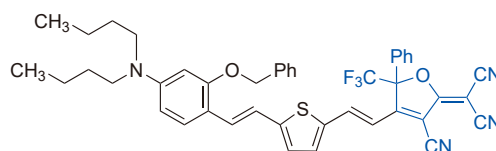
## Advantages

- Enables the synthesis of organic nonlinear optical (NLO) materials with excellent electron-accepting units through condensation reactions of reactive methyl groups and various aldehyde derivatives under mild conditions.
- Due to their strong electron acceptor properties, the obtained tricyanofurans have improved molecular hyperpolarizability and exhibit significant electro-optical (EO) effects.

## Applications



Maximum absorption ( $\lambda_{max}$ ): 681 nm  
Hyperpolarizability ( $\beta$ ):  $1032 \times 10^{-30}$  esu  
EO coefficient : ( $r_{33}$ ): 69 pm/V (25wt% PMMA)<sup>1)</sup>



Maximum absorption ( $\lambda_{max}$ ): 823 nm  
Hyperpolarizability ( $\beta$ ):  $1670 \times 10^{-30}$  esu  
EO coefficient : ( $r_{33}$ ): 76 pm/V (20wt% PMMA)<sup>2,3)</sup>

- References
- 1) F.Liu, Z. Li, et al., *Dyes Pigment.* **2021**, 185, 108914. <https://doi.org/10.1016/j.dyepig.2020.108914>
  - 2) T. Yamada, I. Aoki, H. Miki, A. Otomo, *J. NICT* **2013**, 59, 13. <https://www.nict.go.jp/publication/shuppan/kihou-journal/journal-vol60no1/journal-vol60no1-0202.pdf>
  - 3) T. Yamada, A. Otomo, et al., *Mater. Chem. Phys.* **2013**, 139, 699. <https://doi.org/10.1016/j.matchemphys.2013.02.020>

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