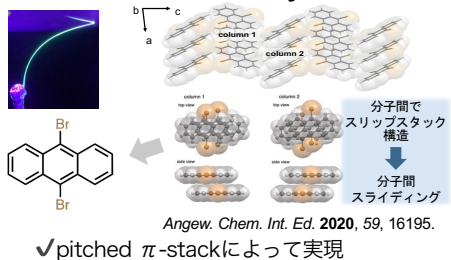


## Introduction

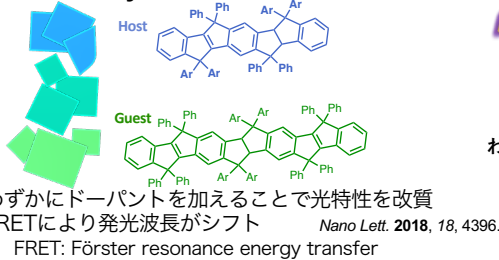
### ◆ 柔軟性有機結晶(EMC)

#### EMC: Elastic Molecular Crystals



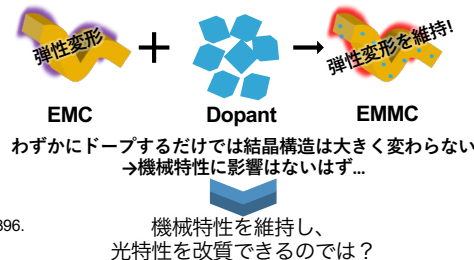
### ◆ 有機混晶(MC)

#### MC: Mixed Crystals

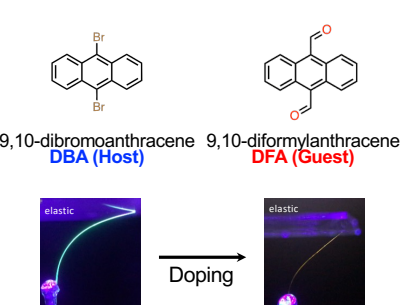


### ◆ 柔軟性有機混晶 (EMMC)

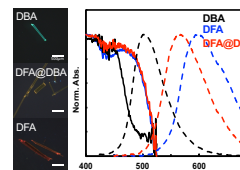
#### EMC + MC → EMMC



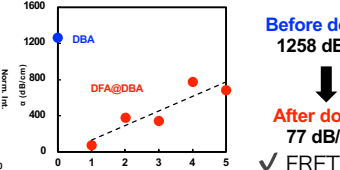
### ◆ 柔軟性有機混晶の光特性改質



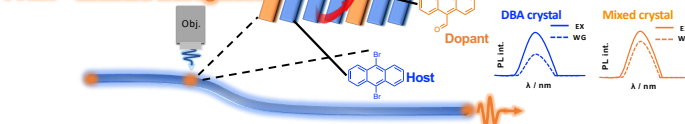
#### Absorption and PL spectra



#### Plots of doping ratio vs loss coefficient

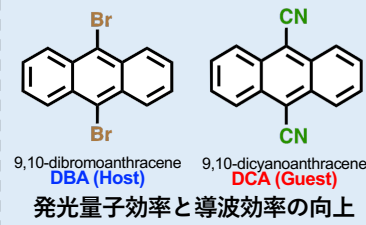


#### FRET-assisted waveguides



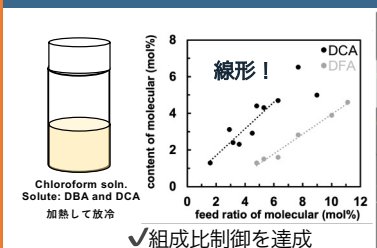
柔軟性低損失光導波路の  
合成アプローチとして有用  
課題  
量子効率が低い

### ◆ This research



K. Ikeda et. al "Flexible FRET-assisted optical waveguide based on elastic mixed molecular crystals" *Aggregate*, 2023, 00, e378.  
マイナビニュース 高知工科大、「弾性分子結晶」の光輸送機能を15倍に向上させる手法を開発 2023年7月6日 14時41分

## Fabrication of EMMCs

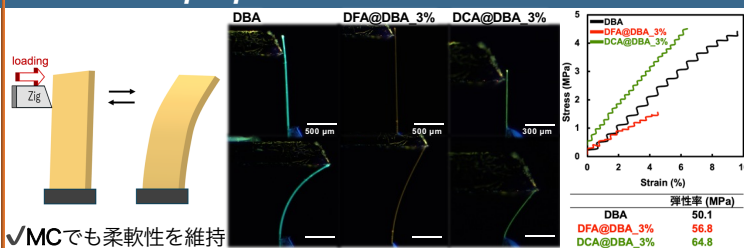


### ◆ Crystal structures

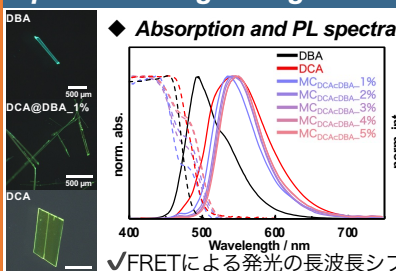
	DBA	DCA@DBA 4%
Crystal system	triclinic	triclinic
Space group	P1	P1
a (Å)	3.9739(3)	3.9715(3)
b (Å)	8.7989(7)	8.8281(8)
c (Å)	16.0872(12)	16.1340(14)
$\alpha$ (deg.)	78.915(3)	78.812(7)
$\beta$ (deg.)	83.942(3)	83.986(6)
$\gamma$ (deg.)	80.816(3)	80.523(7)
V (Å <sup>3</sup> )	543.30(7)	545.79(8)
Z	2	2

✓ 結晶構造に変化なし

## Mechanical properties



## Optical waveguiding characteristics



### ◆ Photoluminescence quantum efficiency

Crystals	$\Phi_{PL}$
DBA	0.036
DFA@DBA	0.004
DCA@DBA	0.016

▲4倍向上!!

✓ 発光性の高い分子を Guest にすることで混晶の発光性を改善

### ◆ Evaluation method of optical waveguides

