

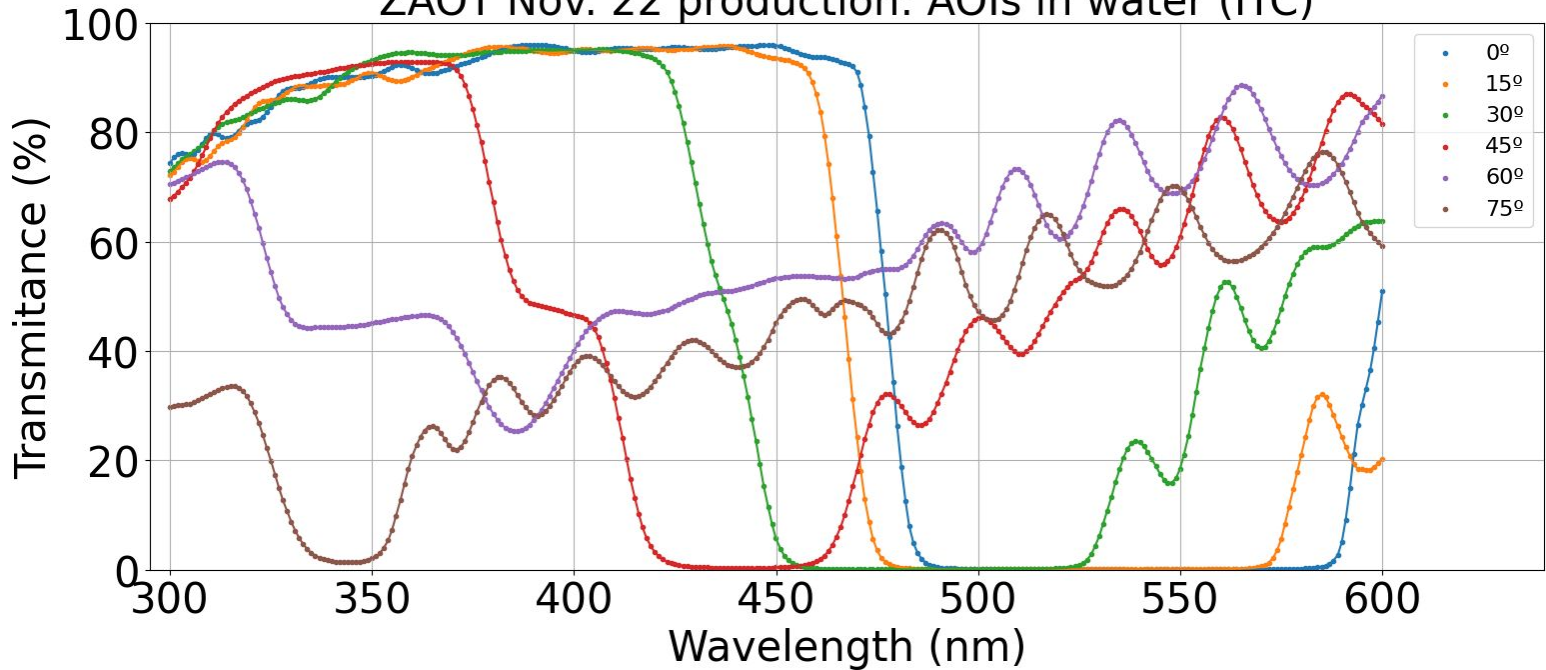
DF optimization for FD2-XA

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Photon Collectors WG - 12 Sep 2023

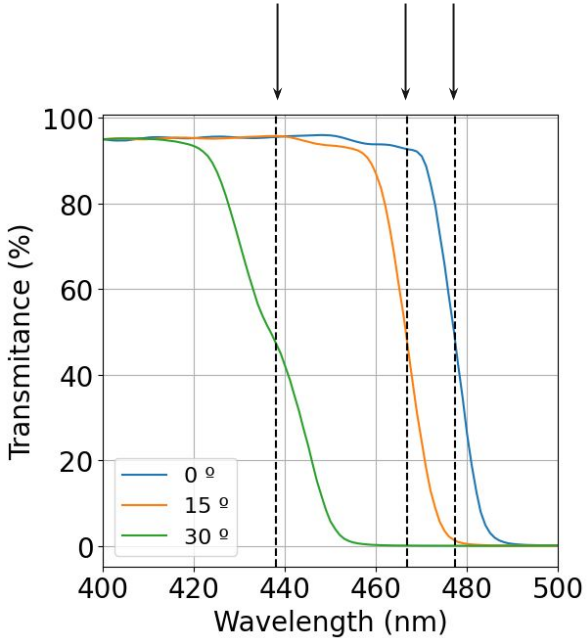
Transmission curves (TC) measured for ZAOT Nov. 22 production in water

ZAOT Nov. 22 production: AOIs in water (ITC)

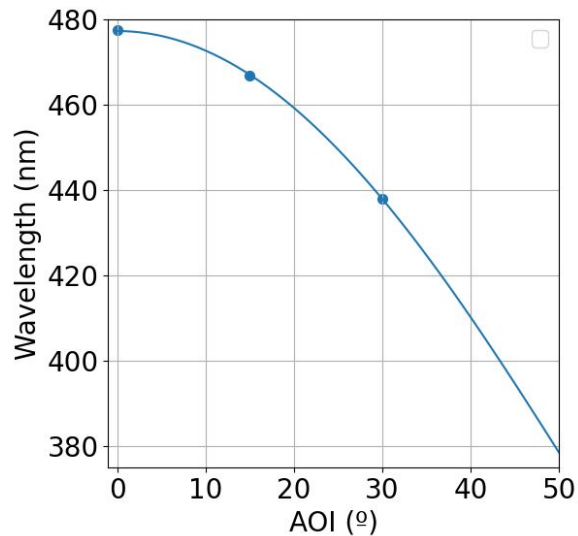


Data pre-processing

Find λ_{cutoff} for different low-AOI curves



Use those to fit the angle-shifts formula, with $n_0=1.33$, using λ_0 and n_{eff} as free parameters



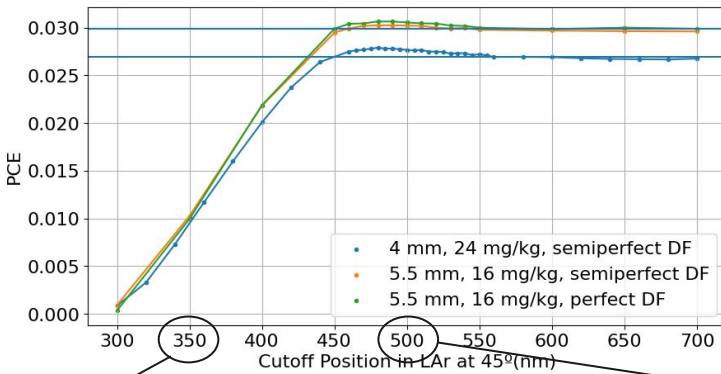
$$\lambda_{\theta} = \lambda_0 \sqrt{\frac{n_0}{n_{\text{eff}}} \sin(\theta)}$$

$\lambda_0^{\text{cutoff}} \simeq 477 \text{ nm}$
 $n_{\text{eff}} \simeq 1.68$

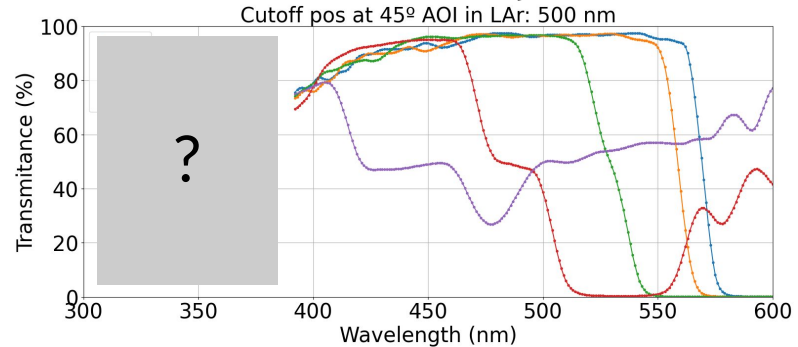
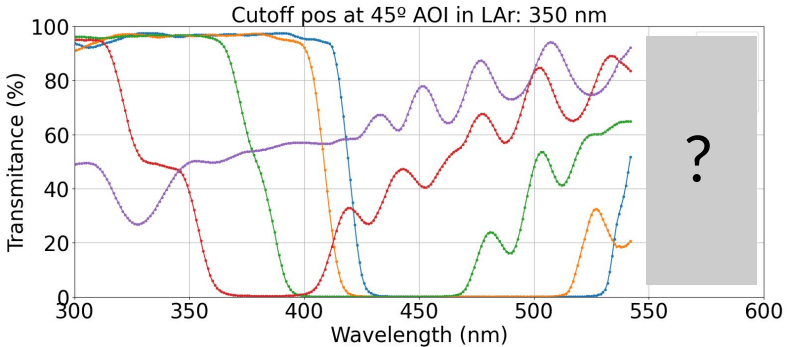
$\lambda_{45, \text{LAr}}^{\text{cutoff}} \simeq 408 \text{ nm}$

Data pre-processing

Knowing $\lambda_{45, LAR}^{cutoff} \simeq 408$ nm, just shift the wavelengths $\lambda_{45, LAR}^{goal} - 408$ nm to achieve a set of TCs whose cutoff for 45° AOI in LAR is placed at $\lambda_{45, LAR}^{goal}$. There's a drawback to this: we may lack data in the [300, 600] nm range.



Result shown in PhCollectors WG meeting on 2023/07/25



Data pre-processing & Results

5.5 mm WLSp thickness, 16 mg/kg cromophore concentration

