

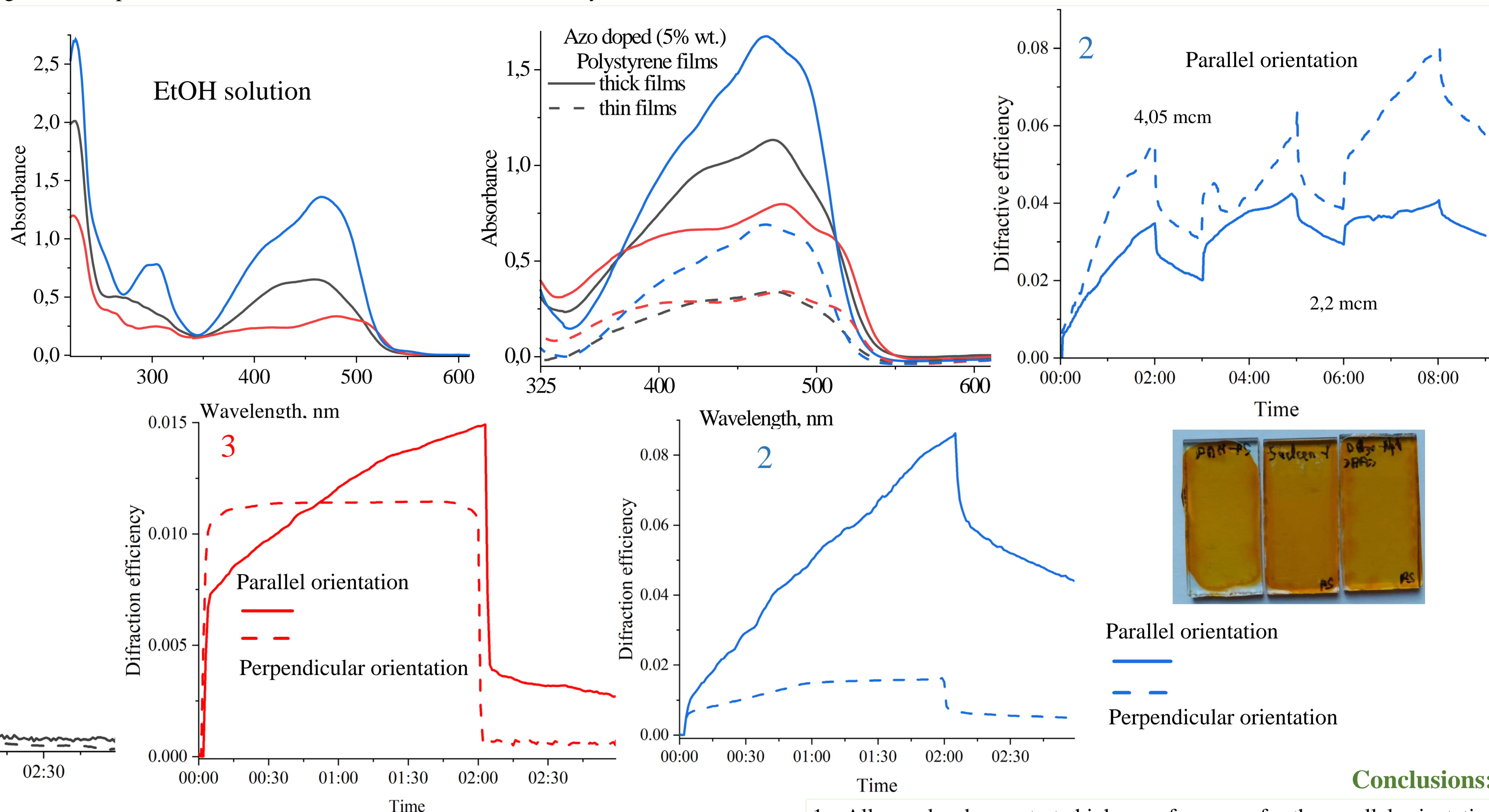
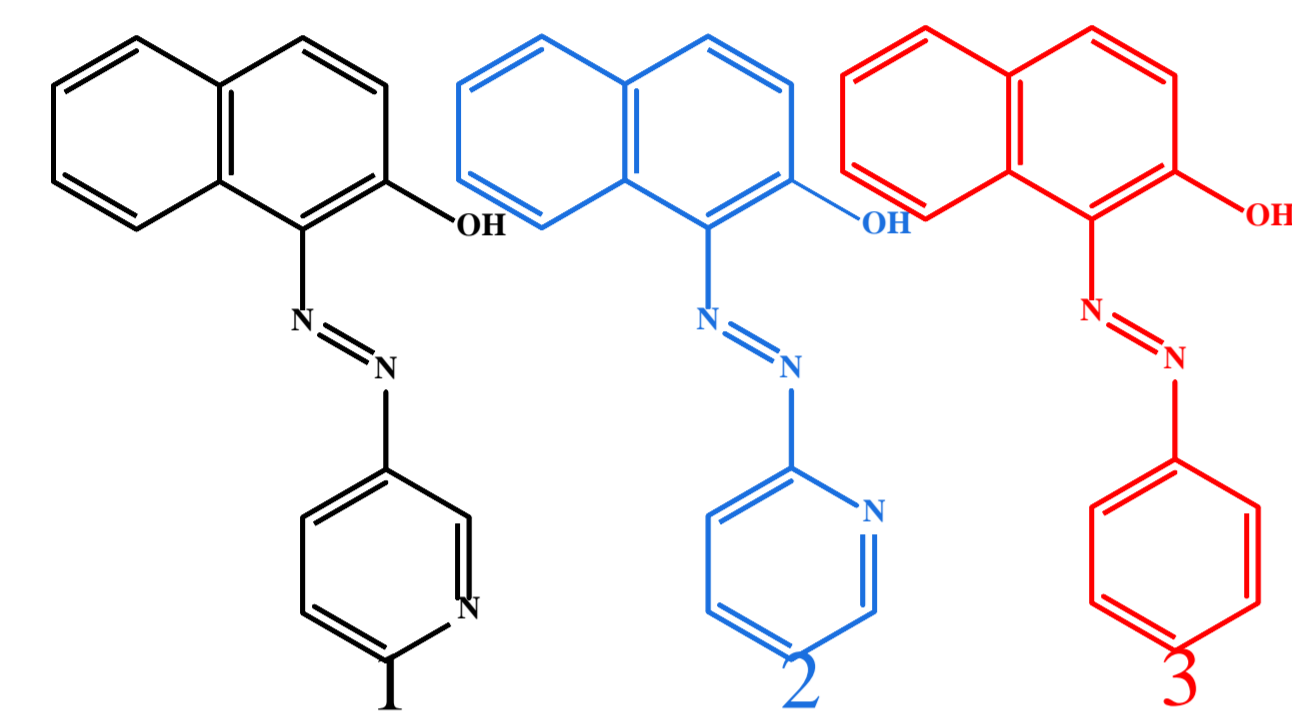
# Azo-compounds based on 2- and 3-aminopyridine: photoinduced E→Z isomerization and diffraction efficiency index in thin films

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Polymers and composites containing azo- chromophore groups are a class of optical materials extensively investigated in the past decade while it combines the virtues of photoisomerization and photo-orientation and nonlinear response to a strong optical field. For example, azobenzenes can be used in in optical information storage devices, as optical switches and sensors, in polarization holography, and in photonics, etc. One of the best matrixes for this deal is polymethylmethacrylate (PMMA) that provide high optic transparency and low light scattering loses. One of the ways of photophysical properties regulation is introduction of heterocyclic fragments into photochromic molecule instead of classic aromatic system.



### Conclusions:

1. All samples demonstrate higher performance for the parallel orientation of the writing beam compared to the perpendicular one. The largest difference is observed for samples **2**.
2. Azo compound **1** demonstrates the dynamic nature of the response in both polarizations of the writing beam. Azo compound **3** shows a weak "memory effect" and a slow increase in response with each subsequent cycle.
3. Azo compound **2** showed the greatest increase in diffraction efficiency during repeated irradiation-relaxation cycles.

Compound	<b>1</b>				<b>2</b>				<b>3</b>			
	2,25 mcm		3,75 mcm		2,2 mcm		4,05 mcm		2,75 mcm		3,75 mcm	
Laser beam polarization	par	per	par	per	par	per	par	per	par	per	par	per
Diffraction efficiency (after 120 sec)	0,00586	0,00677	0,01175	0,01138	0,0348	0,00660	0,08625	0,01624	0,00801	0,01031	0,01492	0,01139
Max Diffraction efficiency	0,00589	0,00983	0,01173	0,00838	0,0348	0,02826	0,08625	0,01624	0,009	0,01509	0,01492	0,01178
Saturation time	99sec	120sec	120 sec	84 sec	120 sec	121sec	125 sec	119sec	90 sec	109 sec	123 sec	44 sec