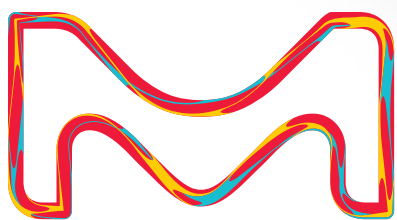


# Illuminated Synthesis



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# Photoredox catalysis and photoreactors enable reproducibility in your research.

Chemists have long struggled with reproducibility in photoredox catalysis. Both varied reaction setups and individual reactions performed with the same setup can be tricky. Our new labware seeks to alleviate these issues by providing photoreactors for each stage of reaction development while ensuring high levels of consistency across reactions and between runs. When combined with our broad portfolio of iridium and ruthenium catalysts and acridinium-based photocatalysts, these tools free synthetic chemists to focus on their next breakthrough.

## Reaction Optimization

The SynLED Parallel Photoreactor 2.0 is the next generation in the SynLED product line. It was designed to facilitate reaction optimization as well as rapid library synthesis ensuring high levels of consistency across reactions and between runs.



SynLED parallel photoreactor (Z744080)

### Features include:

- Bottom-lit LEDs (360 or 450 nm) across a 4 × 4 reaction block array provides consistent light intensity (320 lm) and angle (60° and 45°, respectively)
- New heat exchange system provides consistent temperature for each parallel reaction
- Compatible with 1–2 dram scintillation vials or microwave vials with O.D. of 1.7 cm or less
- Performance quartz LED cover protects LEDs from solvent while allowing excellent light penetration
- Designed to fit on a conventional stir plate; and is compatible with IKA brand stir plates

## Reaction Optimization

Cat. No.	Product Description
Z744080	450 nm LEDs
Z744081	360 nm LEDs

## Scale-Up

The Penn PhD Photoreactor m2 is a benchtop instrument designed for you to accelerate chemical reactions using photoredox catalysis. The Photoreactor m2 combines LED illumination, mechanical stirring, and cooling into one device. Define parameters of temperature, intensity, stir rate and time to improve repeatability, traceability, efficiency, and consistency of your results. The Photoreactor m2 allows you to streamline synthetic sequences and create valuable strategies for addressing some of the challenges of molecule construction in drug discovery.



Penn PhD Photoreactor m2 (Z744035)

### Features include:

- Complete benchtop instrument
- Modular design can be used at a variety of wavelengths from 365–450 nm.
- 360-degree reflective environment maximizes surface-area photon capture.
- Light shield interlock prevents user exposure to harmful rays.
- Interactive touch screen controls reaction parameters.
- Intertek ETL, CE, and CB approved for safety, quality, and performance.
- User defined parameters: temperature, light intensity, fan speed, and stirring
- Auto stop, pause, and reset options
- Supports gas chromatography vial sizes 4, 8, 20, and 40 mL.
- Temperature feedback using a k-type thermocouple

## Scale-Up

Cat. No.	Product Description
Z744035	Penn PhD Photoreactor M2 with 450 nm LED light module
Z744031	365 nm LED light module
Z744032	420 nm LED light module
Z744033	450 nm LED light module
Z744078	395 nm LED light module

## Photocatalysts

We offer a continuously growing portfolio of acridinium, iridium and ruthenium catalysts, and other metal-free organic photocatalysts and ligands providing a broad range of complex photoredox catalysts for any reaction design.

### Iridium Catalysts

Cat. No.	Product Description
747769	[Ir(dtbbpy)(ppy) <sub>2</sub> ] <sub>2</sub> PF <sub>6</sub>
658383	[(ppy) <sub>2</sub> IrCl] <sub>2</sub>
804215	[Ir(dFCF <sub>3</sub> ppy) <sub>2</sub> (bpy)]PF <sub>6</sub>
747793	[Ir(dF(CF <sub>3</sub> )ppy) <sub>2</sub> (dtbbpy)]PF <sub>6</sub>
902217	[Ir(dFFppy) <sub>2</sub> -(4,4'-dCF <sub>3</sub> bpy)]PF <sub>6</sub>
902225	[Ir(dFMeppy) <sub>2</sub> -(4,4'-dCF <sub>3</sub> bpy)]PF <sub>6</sub>
901409	[Ir(dF(Me)ppy) <sub>2</sub> (dtbbpy)]PF <sub>6</sub>
900538	Ir(p-F-ppy) <sub>3</sub>
688096	Ir(ppy) <sub>3</sub>
900539	Ir[p-F(t-Bu)-ppy] <sub>3</sub>
900570	Ir[dF(t-Bu)-ppy] <sub>3</sub>
900540	Ir(dFppy) <sub>3</sub>
901368	[Ir(dFppy) <sub>2</sub> (dtbbpy)]PF <sub>6</sub>
922897	[Ir(ppy) <sub>2</sub> (5,5'-Me <sub>2</sub> bpy)]PF <sub>6</sub>
900570	Ir[dF(t-Bu)-ppy] <sub>3</sub>
904694	Ir(p-CF <sub>3</sub> -ppy) <sub>3</sub>
905100	Ir(p-tBu-ppy) <sub>3</sub>
905518	Ir(dFFppy) <sub>2</sub> (dtbbpy)PF <sub>6</sub>
905917	[Ir(Me(Me)ppy) <sub>2</sub> (dtbbpy)]PF <sub>6</sub>
908568	[Ir(dFCF <sub>3</sub> ppy) <sub>2</sub> -(5,5'-dCF <sub>3</sub> bpy)]PF <sub>6</sub>
908703	[Ir(p-F(Me)ppy) <sub>2</sub> -(4,4'-dtbbpy)]PF <sub>6</sub>
911607	[Ir(dFOMeppy) <sub>2</sub> -(5,5'-dCF <sub>3</sub> bpy)]PF <sub>6</sub>
912948	[Ir(FCF <sub>3</sub> (CF <sub>3</sub> )ppy) <sub>2</sub> (dtbbpy)]PF <sub>6</sub>
925497	[Ir(dFOMeppy) <sub>2</sub> (dtbbpy)]PF <sub>6</sub>
929743	[Ir(df(CF <sub>3</sub> )ppy) <sub>2</sub> (4,4'-(OMe) <sub>2</sub> bpy)]BF <sub>4</sub>

### Ruthenium Catalysts

Cat. No.	Product Description
90819	Ru(bpy) <sub>2</sub> (phen-5-NH <sub>2</sub> )(PF <sub>6</sub> ) <sub>2</sub>
343714	Dichlorotris(1,10-phenanthroline)ruthenium(II) hydrate
747785	[Ru(bpm) <sub>3</sub> ][Cl] <sub>2</sub>
754730	Ru(bpy) <sub>3</sub> (PF <sub>6</sub> ) <sub>2</sub>
224758	Ru(bpy) <sub>3</sub> Cl <sub>2</sub>
903426	Ru(p-CF <sub>3</sub> -bpy) <sub>3</sub> (BF <sub>4</sub> ) <sub>2</sub>
904767	[Ru(phen) <sub>3</sub> Cl] <sub>2</sub>
904945	[Ru(dmbpy) <sub>3</sub> ](PF <sub>6</sub> ) <sub>2</sub>
904953	[Ru(dtbbpy) <sub>3</sub> ](PF <sub>6</sub> ) <sub>2</sub>

## Acridinium-Based Photocatalysts

Cat. No.	Product Description
900694	10-(3,5-Dimethoxyphenyl)-9-mesityl-1,3,6,8-tetramethoxyacridin-10-ium tetrafluoroborate
900421	9-Mesityl-3,6-di-tert-butyl-10-phenylacridinium tetrafluoroborate
793876	9-Mesityl-2,7-dimethyl-10-phenylacridinium tetrafluoroborate
794171	9-Mesityl-10-methylacridinium tetrafluoroborate
900693	9-Mesityl-1,3,6,8-tetramethoxy-10-phenylacridin-10-ium tetrafluoroborate
920223	3,6-Di-tert-butyl-9-(2,6-dimethylphenyl)-10-(4-(trifluoromethyl)phenyl)acridin-10-ium tetrafluoroborate
925853	3,6-Bis(dimethylamino)-9-mesityl-10-methylacridinium bromide
925888	6-(Dimethylamino)-9-(2,6-dimethylphenyl)-1-methoxy-10-phenylacridinium bromide
925896	7-(Dimethylamino)-1-methoxy-9-(naphthalen-1-yl)-10-phenylacridinium bromide
925918	9-(2,6-Dimethylphenyl)-1-methoxy-10-phenylacridinium bromide
909033	2,7-Dibromo-9-mesityl-10-methylacridinium tetrafluoroborate
909181	2,7-Dimethyl-9-mesityl-10-methylacridinium tetrafluoroborate
909254	2,7-Difluoro-9-mesityl-10-methylacridinium tetrafluoroborate
909319	2,7-Dibromo-10-methylacridone
909327	2,7-Dimethoxy-9-mesityl-10-methylacridinium tetrafluoroborate

## Other Organic Photocatalysts and Ligands

Cat. No.	Product Description
798819	(S)-N-Butyl-1-[(S)-2-((E)-2-hydroxybenzylideneamino)-3-methylbutanoyl]pyrrolidine-2-carboxamide
901111	3,7-Di(4-biphenyl) 1-naphthalene-10-phenoxazine
902829	2-(2,4-Difluorophenyl)-5-methylpyridine
902802	2-(2,4-Difluorophenyl)-5-fluoropyridine
902810	4,4'-Bis(trifluoromethyl)-2,2'-bipyridine
901112	5,10-Di(2-Naphthyl)-5,10-dihydrophenazine
901466	Mes-Umemoto reagent
902136	2,4,6-Tri-(4-fluorophenyl)pyrylium tetrafluoroborate
900692	2,4,6-Tris(4-methoxyphenyl)pyrylium tetrafluoroborate
900685	2,4,6-Tri(p-tolyl)pyrylium Tetrafluoroborate Salt
903167	10-phenylphenothiazine
905194	10-Ethyl-3,7,8-trimethyl-benzo[g]pteridine-2,4(3H,10H)-dione
906115	2,7-Dibromoacridone
908177	3DPAFIPN
908185	3DPA2FBN
908193	3CzCIIPN
908762	5,5'-Bis(trifluoromethyl)-2,2'-bipyridine
909335	2-(2,4-Difluorophenyl)-5-(trifluoromethyl)pyridine
909343	2-(4-Fluorophenyl)-5-methylpyridine
911623	2-(2,4-Difluorophenyl)-5-methoxypyridine
907502	Potassium 5-bromo-1H-indole-1-carbodithioate
913391	2-[2-Fluoro-4-(trifluoromethyl)phenyl]-5-(trifluoromethyl)Pyridine

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## Other Organic Photocatalysts and Ligands (cont.)

Cat. No.	Product Description
914371	Tris(cis-2,6-dimethylpiperidinyl)-cyclopropenium perchlorate
915157	iPr-PDI
915610	PrPPTNO
916722	Phenyl-(benzo)phenothiazine
908444	DPZ
915297	4CzIPN
919349	NaDT
922641	Pr-DMQA[BF <sub>4</sub> ]
926795	3CzEPAIPN
913529	Birch O-PC™ C0102
913782	Birch O-PC™ C0104
914797	Birch O-PC™ C0103

Find these photoredox catalysis products as well as technology spotlights and application notes on [SigmaAldrich.com/photocatalysis](https://www.sigmaaldrich.com/photocatalysis).

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