Product Catalogue 2022/2023

Surface Solutions, Fluorescent Materials, Microsensors

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About

Surflay Nanotec GmbH focuses on functional surfaces, nanoscale coatings, polymers and microsensors. Our aim at Surflay is to rapidly deliver product-oriented scientific solutions to our customers and partners.

WHAT WE DO:

We offer four inter-connected services:

- Contract research and surface solutions: surface modification and functionalization, Layer-by-Layer (LbL) coatings
- Fluorescent labeled polymers (e.g. surface charactisation)
- Fluorescence particle and functionalised particles (e.g. microscopy and lateral-flow-assay)
- Microbubbles (e.g. cell sorting purification, separation, contrast agent for medical imaging)
- Microsensors: bioanalysis, pH, temperature & more (e.g. microfluidics and cell cultures)

CONTACT US for more information if you are interested in:

- Tailored research & development
- Analytical services
- Licensing our technology
- Third-party-funded joint research projects

OUR CUSTOMERS AND PARTNERS include:

- Pharmaceutical and chemical companies
- Consumer good and food manufacturers
- Universities and institutes

KEY TECHNOLOGY:

Our key for rapid innovation is the Layer-by-Layer (LbL) technology: a coating method that most commonly uses charged polymers (polyelectrolytes).

What makes LbL coatings unique is their flexibility, aqueous nature and cost-efficiency.

Current applications of LbL coatings include modern separating materials, substance encapsulation, enzyme immobilisation as well as sensory or diagnostic beads.

For a quote, please contact us!

Dr. habil. Lars Dähne
Chief Executive Officer

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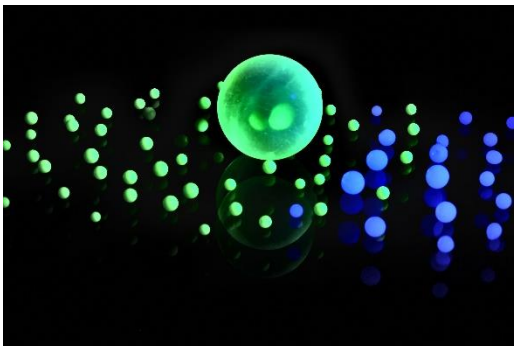
Introduction



- The monodisperse polymer particles produced by Surflay Nanotec can be labelled with one or multiple fluorescent dyes
- Applicable fluorescent dyes cover the entire visible range of the electromagnetic spectrum
- Fluorescent labelling of the polymer particles takes place during particle synthesis. Leaching of the dyes is prevented.
- These polymer particles have particularly homogeneous dye distribution within the particle, compared to particles labelled post-synthesis.
- During the labelling phase several fluorescent dyes can be used and the dye concentration can be controlled. Thus the resulting fluorescence intensity can be fine-tuned.
- Finally, fluorescence-labelled polymer particles can be provided with specific functional groups on the surface.

Contact us for a quotation on these products or for tailored synthesis requests!

1.1 Melamine formaldehyde

Facts

Matrix	melamine formaldehyde
Density	1.5
refractive Index	1.7
surface groups	NH_2
CV	<5%
Solids Content (wt.-%)	1 %

Price list:

Bottle Size (mL)	Price (€)	Price (US$)	Price (GBP)
1	74	107	80
5	142	204	153
10	187	269	202

Green 3 – Ex435/Em475

Nominal diameter (µm)	Bottle Size (mL)	Product No.
3	1	MFF102-2-1
3	5	MFF102-2-5
3	10	MFF102-2-10
4	1	MFF103-2-1
4	5	MFF103-2-5
4	10	MFF103-2-10
5	1	MFF104-2-1
5	5	MFF104-2-5
5	10	MFF104-2-10

Green 6 – Ex465/Em490

Nominal diameter (µm)	Bottle Size (mL)	Product No.
3	1	MFF102-3-1
3	5	MFF102-3-5
3	10	MFF102-3-10
4	1	MFF103-3-1
4	5	MFF103-3-5
4	10	MFF103-3-10

Red 3 – Ex665/Em670

Nominal diameter (µm)	Bottle Size (mL)	Product No.
4	1	MFF103-5-1
4	5	MFF103-5-5
4	10	MFF103-5-10

Facts

Matrix	Polystyrene
Density	1.05
refractive Index	1.6
surface groups	COOH
CV	<5%
Solids Content (wt.-%)	1 %

Price list:

Bottle Size (mL)	Price (€)	Price (US$)	Price (GBP)
1	62	89	67
5	129	186	139
10	170	245	184

Green 4 – Ex440/Em475

Nominal diameter (µm)	Bottle Size (mL)	Product No.
0.2	1	PSF101-3-1
0.2	5	PSF101-3-5
0.2	10	PSF101-3-10
0.5	1	PSF103-3-1
0.5	5	PSF103-3-5
0.5	10	PSF103-3-10
1	1	PSF104-3-1
1	5	PSF104-3-5
1	10	PSF104-3-10
2	1	PSF105-3-1
2	5	PSF105-3-5
2	10	PSF105-3-10
3	1	PSF106-3-1
3	5	PSF106-3-5
3	10	PSF106-3-10

Orange 1 – Ex535/Em565

Nominal diameter (µm)	Bottle Size (mL)	Product No.
0.2	1	PSF101-4-1
0.2	5	PSF101-4-5
0.2	10	PSF101-4-10
0.5	1	PSF103-4-1
0.5	5	PSF103-4-5
0.5	10	PSF103-4-10
1	1	PSF104-4-1
1	5	PSF104-4-5
1	10	PSF104-4-10
3	1	PSF106-4-1
3	5	PSF106-4-5
3	10	PSF106-4-10
5	1	PSF107-4-1
5	5	PSF107-4-5
5	10	PSF107-4-10
10	1	PSF108-4-1
10	5	PSF108-4-5
10	10	PSF108-4-10

Red 1 – Ex625/Em650

Nominal diameter (µm)	Bottle Size (mL)	Product No.
0.2	1	PSF101-5-1
0.2	5	PSF101-5-5
0.2	10	PSF101-5-10
0.3	1	PSF102-5-1
0.3	5	PSF102-5-5
0.3	10	PSF102-5-10
0.5	1	PSF103-5-1
0.5	5	PSF103-5-5
0.5	10	PSF103-5-10
1	1	PSF104-5-1
1	5	PSF104-5-5
1	10	PSF104-5-10
3	1	PSF106-5-1
3	5	PSF106-5-5
3	10	PSF106-5-10
5	1	PSF107-5-1
5	5	PSF107-5-5
5	10	PSF107-5-10
10	1	PSF108-5-1
10	5	PSF108-5-5
10	10	PSF108-5-10

Violet 1 – Ex340/Em395

Nominal diameter (µm)	Bottle Size (mL)	Product No.
0.2	1	PSF101-2-1
0.2	5	PSF101-2-5
0.2	10	PSF101-2-10
0.3	1	PSF102-2-1
0.3	5	PSF102-2-5
0.3	10	PSF102-2-10
0.5	1	PSF103-2-1
0.5	5	PSF103-2-5
0.5	10	PSF103-2-10
1	1	PSF104-2-1
1	5	PSF104-2-5
1	10	PSF104-2-10
2	1	PSF105-2-1
2	5	PSF105-2-5
2	10	PSF105-2-10
3	1	PSF106-2-1
3	5	PSF106-2-5
3	10	PSF106-2-10
5	1	PSF107-2-1
5	5	PSF107-2-5
5	10	PSF107-2-10

Fluorescent particles & Particles

1.3 Polymethylmethacrylate

Facts

Matrix	Polymethylmethacrylate
Density	1.18
refractive Index	1.5
surface groups	COOH, epoxy
CV	<5%
Solids Content (wt.-%)	1 %

Price list:

Bottle Size (mL)	Price (€)	Price (US$)	Price (GBP)
1	74	107	80
5	142	204	153
10	187	269	202

Green 4 – Ex440/Em475

Nominal diameter (µm)	Bottle Size (mL)	Product No.
0.2	1	PMF101-3-1
0.2	5	PMF101-3-5
0.2	10	PMF101-3-10
2	1	PMF105-3-1
2	5	PMF105-3-5
2	10	PMF105-3-10
3	1	PMF106-3-1
3	5	PMF106-3-5
3	10	PMF106-3-10
5	1	PMF107-3-1
5	5	PMF107-3-5
5	10	PMF107-3-10

Orange 1 – Ex535/Em565

Nominal diameter (µm)	Bottle Size (mL)	Product No.
0.2	1	PMF101-4-1
0.2	5	PMF101-4-5
0.2	10	PMF101-4-10
3	1	PMF106-4-1
3	5	PMF106-4-5
3	10	PMF106-4-10
5	1	PMF107-4-1
5	5	PMF107-4-5
5	10	PMF107-4-10

Red 1 – Ex625/Em650

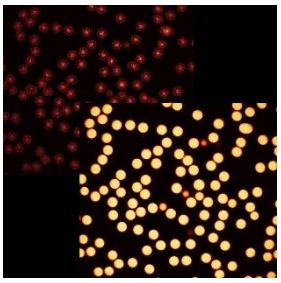
Nominal diameter (µm)	Bottle Size (mL)	Product No.
0.2	1	PMF101-5-1
0.2	5	PMF101-5-5
0.2	10	PMF101-5-10
0.5	1	PMF103-5-1
0.5	5	PMF103-5-5
0.5	10	PMF103-5-10
2	1	PMF105-5-1
2	5	PMF105-5-5
2	10	PMF105-5-10
3	1	PMF106-5-1
3	5	PMF106-5-5
3	10	PMF106-5-10
5	1	PMF107-5-1
5	5	PMF107-5-5
5	10	PMF107-5-10

Violet 1 – Ex340/Em395

Nominal diameter (µm)	Bottle Size (mL)	Product No.
0.2	1	PMF101-2-1
0.2	5	PMF101-2-5
0.2	10	PMF101-2-10
0.3	1	PMF102-2-1
0.3	5	PMF102-2-5
0.3	10	PMF102-2-10
2	1	PMF105-2-1
2	5	PMF105-2-5
2	10	PMF105-2-10
3	1	PMF106-2-1
3	5	PMF106-2-5
3	10	PMF106-2-10
5	1	PMF107-2-1
5	5	PMF107-2-5
5	10	PMF107-2-10

2 Microsensors

Introduction



Surflay's microsensors are modified microparticles, which can quantify various parameters such as:

- pH
- temperature
- O_2 amount
- biomolecular interactions (via WhisperSense platform)

No electronic part must be in contact with the sample: changes in microparticle's fluorescence intensity are used for analysis. These microsensors are therefore ideal for measurements in smallest spaces:

- microfluidics
- cell cultures
- cell arrays
- organ-on-a-chip
- and more

There are three approaches to use microsensors i.e. dye-embedded microparticles:

- Fluorescence lifetime measurements are independent of the concentration and size of the size
- Intensity-based measurements require internal fluorescence standards or dual fluorescence in order to eliminate the influence of particle size and sample transparency.
- Whispering Gallery Modes (only for bioanalysis)

In the image below, for example, it can be seen that the fluorescence of pH microsensors change with pH.

2.1 Temperature sensor

Facts

Matrix	Polymethylmethacrylate
Density	1.18
Refractive Index	1.5
Surface groups	COOH, epoxy
Microscopy compatible	yes
Solids Content (wt.-%)	1

Price list:

Bottle Size (mL)	Price (€)	Price (US$)	Price (GBP)
0-1	100	144	108
0.5	400	576	432
1	700	1008	756

Fluorescence: Ex360 nm/Em$_{ref}$450 nm/Em$_{sig}$ 615 nm

Nominal diameter (µm)	Bottle Size (mL)	Product No.
5	0.1	PMF201-1-1
5	0.5	PMF201-1-5
5	1	PMF201-1-10

Microsensors

2.2 Oxygen sensor

Facts

Matrix	Polystyrene
Density	1.05
Refractive Index	1.6
Surface groups	COOH
Microscopy compatible	yes
Solids Content (wt.-%)	1

Price list:

Bottle Size (mL)	Price (€)	Price (US$)	Price (GBP)
0.1	100	144	108
0.5	400	576	432
1	700	1008	756

Fluorescence: Ex380 nm/Ex_{ref}530 nm/Em_{sig} 645 nm

Nominal diameter (µm)	Bottle Size (mL)	Product No.
0.2	0.1	PSF201-1-1
0.2	0.5	PSF201-1-5
0.2	1	PSF201-1-10
0.3	0.1	PSF202-1-1
0.3	0.5	PSF202-1-5
0.3	1	PSF202-1-10
0.5	0.1	PSF203-1-1
0.5	0.5	PSF203-1-5
0.5	1	PSF203-1-10
1	0.1	PSF204-1-1
1	0.5	PSF204-1-5
1	1	PSF204-1-10
3	0.1	PSF206-1-1
3	0.5	PSF206-1-5
3	1	PSF206-1-10
5	0.1	PSF207-1-1
5	0.5	PSF207-1-5
5	1	PSF207-1-10

3 Fluorescence labelled polymers

Introduction

When polyelectrolyte molecules are covalently linked to fluorescent dyes, they can be monitored in a:

- fluorescence microscope
- laser scanning microscope
- fluorescence spectrometer
- flow cytometer
- and more

By means of a confocal laser scanning microscope, for example, the amount of labeled polymers adsorbed at a surface can be quantitatively determined, giving information on surface properties of materials (charge, porosity), flow conditions in tubes, deposit/sediment on catheters or in microfluidics, etc .

Furthermore, these polymers can be used in all Layer-by-Layer coatings in order to evaluate coating performance and stability. We offer a wide choice of fluorescent polymers tailored for the excitation and emission settings of your instruments.

In addition to fluorescent dyes, Surflay labels polymers with other functional materials such as complexation agents, photo receptors or radical formers on request.

Below is a list of the dye-labelled polyelectrolytes we offer.

(Label degree = dye units/ monomer units)

Price information:

Contact us for a quotation on these products or for tailored synthesis requests! Prices range from €200 to €400 for 10 mg.

3.1 Rhodamine

Rhodamine – Em555/Ex582

Polymer	Label degree	Mol. weight	Functional group	Charge	Product No.
Chitosan S	1:210	50000-1M	NH_2	+	ChitRho210
CM Dextran	1:347	35-50000	COOH	-	DexRho347
CM Dextran	1:276	35-50000	COOH	-	DexRho276
CM Dextran	1:282	35-50000	COOH	-	DexRho282
CMC	1:188	700000	COOH	-	CMCRho188
Dextran	1:300	35000-50000	OH	-	DexRho300
Dextran	1:111	35000-50000	OH	-	DexRho111
Dextran	1:148	15000-20000	OH	-	DexRho148
Dextran	1:141	8000-12000	OH	-	DexRho141
Gelatine A	1:524	13500-500000	NH_2	+	GelRho524
PAH	1:234	3000	NH_2	+	PAHRho234
PAH	1:480	3000	NH_2	+	PAHRho480
PAH	1:392	15000	NH_2	+	PAHRho392
PAH	1:145	40000	NH_2	+	PAHRho145
PAH	1:512	40000	NH_2	+	PAHRho512
PAH	1:1009	40000	NH_2	+	PAHRho1009
PAH	1:665	70000	NH_2	+	PAHRho665
PAH	1:296	150000	NH_2	+	PAHRho296
PDA	1:768	n.a.	quat. Amine	+	PDARho768
PDA	1:441	n.a.	quat. Amine	+	PDARho441
PEI	1:834	25000	-NH-, NH_2	+	PEIRho834
PEI	1:238	25000	-NH-, NH_2	+	PEIRho238
PEI linear	1:127	25000	-NH-	+	PEIRho127
PEI linear	1:148	25000	-NH-	+	PEIRho148
PEI linear	1:259	25000	-NH-	+	PEIRho259
PEI	1:680	70000	-NH-, NH_2	+	PEIRho680
PEI	1:361	750000	-NH-, NH_2	+	PEIRho361
PMAA	1:802	100000	COOH	-	PMMARho802
PMAA	1:164	100000	COOH	-	PMMARho164
PMAA	1:152	100000	COOH	-	PMMARho152
PMAA	1:195	100000	COOH	-	PMMARho195
PSS	1:167	70000	-SO3Na	-	PSSRho167
PSS	1:93	k.A.	-SO3Na	-	PSSRho93

Fluorescein – Ex497/Em520

Polymer	Label degree	Mol. weight	Functional group	Charge	Product No.
Albumin	1:0,412	70000	NH_2	≙ pKa	AlFlu0412
Chitosan-LM	1:230	50000-3M	NH_2	+	ChitFlu230
Chitosan	1:471	700000-3M	NH_2	+	ChitFlu471
Lysozym	n.a.	14600	n.a.	≙ pKa	LysFlu00A
Lysozym	n.a.	14600	n.a.	≙ pKa	LysFlu00B
PAA	1:833	30000	COOH	-	PAAFlu833
PAA	1:1502	30000	COOH	-	PAAFlu1502
PAA	1:113	100000	COOH	-	PAAFlu113
PAA	1:165	100000	COOH	-	PAAFlu165
PAH	1:255	3000	NH_2	+	PAHFlu255
PAH	1:224	15000	NH_2	+	PAHFlu224
PAH	1:22	40000	NH_2	+	PAHFlu22
PAH	1:230	40000	NH_2	+	PAHFlu230
PAH	1:307	150000	NH_2	+	PAHFlu307
PEI	1:50	2000	NH_2	+	PEIFlu50
PMAA	1:955	n.a.	COOH	-	PMMAFlu955
PMAA	1:758	n.a.	COOH	-	PMMAFlu758
PMAA	1:432	n.a.	COOH	-	PMMAFlu432
PMAA	1:527	n.a.	COOH	-	PMMAFlu527
PMAA	1:234	100000	COOH	-	PMMAFlu234
PMAA	1:576	100000	COOH	-	PMMAFlu576
PMAA	1:386	100000	COOH	-	PMMAFlu386
PSS	1:810	n.a.	SO3Na	-	PSSFlu810
PSS	1:495	n.a.	SO3Na	-	PSSFlu495
PSS	1:1167	n.a.	SO3Na	-	PSSFlu1167
PSS	1:380	n.a.	SO3Na	-	PSSFlu380
Xanthan	1:21	n.a.	COOH	-	XanFlu21

Fluorescence labelled polymers

3.3 Cy3

Cy3 – Ex550/Em568

Polymer	Label degree	Mol. weight	Functional group	Charge	Product No.
Chitosan	1:1032	50.000-3M	NH_2	+	ChitCy31032
PAH	1:167	15000	NH_2	+	PAHCy3167
PAH	1:545	15000	NH_2	+	PAHCy3545
PAH	1:279	15000	NH_2	+	PAHCy3279
PAH	1:430	15000	NH_2	+	PAHCy3430
PAH	1:173	56000	NH_2	+	PAHCy3173
PAH	1:610	56000	NH_2	+	PAHCy3610
PAH	1:245	70000	NH_2	+	PAHCy3245
PAH	1:389	70000	NH_2	+	PAHCy3389
PMAA	1:256	n.a.	COOH	-	PMAACy3256
PMAA	1:814	n.a.	COOH	-	PMAACy3814
PMAA	1:380	n.a.	COOH	-	PMAACy3380
PDA	1:770	n.a.	quat. Amine	+	PDACy3770
PDA	1:196	n.a.	quat. Amine	+	PDACy3196

Fluorescence labelled polymers

3.4 Other

Other – mix of different labeled Polymers

Polymer	Label degree	Mol. weight	Functional group	Charge	FS	Ext (nm)	Em (nm)	Product No.
PAH	1:409:436	70000	NH_2	+	Rh, Flu	490/555	515/582	PAHRh436
PAH	1:630:254	70000	NH_2	+	Rh, Flu	490/555	515/582	PAHRh254
PAA	1:139	100000	COOH	-	BR	655	674	PAABR139
PEI25	1:96	25000	-NH-, NH_2	+	BR	655	674	PEIBR96
CMC	1:66	n.a.	n.a.	-	BR	655	674	CMCBR66
CMC	1:205	n.a.	n.a.	-	BR	655	674	CMCBR205
PAH	1:146	40000	NH_2	+	Atto390	391	472	PAHAtto146
PAH	1:230	40000	NH_2	+	SNARF	pH dep.	pH dep.	PAHSna230
PEI	1:132	25000	NH, NH_2	+	Atto390	391	472	PEIAtto132
PEI	1:123	70000	NH, NH_2	+	Atto390	391	472	PEIAtto123
PSS	1:85	n.a.	SO3Na	-	Pyren	335	388	PSSPyr85
PMAA	1:104	100000	COOH	-	Biiotin	x	x	PMAABio104
PAH	1:296	15000	NH_2	+	Cy5	648	665	PAHCy5296

PAH	1:289	56000	NH_2	+	Cy5	648	665	PAHCy5289
PAH	1:555	56000	NH_2	+	Cy5	648	665	PAHCy5555
PAH	1:135	40000	NH_2	+	FR	508	530	PAHFr135
PEI	1:190	25000	NH, NH_2	+	FR	508	530	PEIFr190
PEI	1:169	70000	NH, NH_2	+	FR	508	530	PEIFr169
PMMA	1:219	100000	COOH	-	FR	508	530	PMMAFr219
PMMA	1:326	100000	COOH	-	FR	508	530	PMMAFr326

0 List of abbreviations:

Polymers	**Full names**
CM Dextran	Carboxymethyl dextran
CMC	Carboxymethyl cellulose
PAH	Poly (allyl amine) hydrochloride
PDA	Polydadmac, Poly (diallyldimethylammonium chloride)
PEI	Poly (ethyleneimine)
PMAA	Poly (methacrylic acid)
PSS	Poly (styrenesulfonate)
PAA	Poly (acrylic acid)

Fluorophores	**Full names**
Rh	Rhodamine
Flu	Fluorescein
FR	Proprietary dye, ext/em similar to that of fluorescein, but the dye itself is more photostable
BR	Proprietary dye, ext/em similar to that of CY5, but the dye itself is more photostable
SRh	Sulforhodamine