



**Makrolon®**



# Pushing Boundaries

# TAILORED MATERIALS FOR SENSOR LENSES AND HOUSINGS

[covestro.com](https://www.covestro.com)

# Automobile industry is changing rapidly to CASE\*

\*CONNECTED, AUTONOMOUS, SHARED, ELECTRIC



© Covestro, 2020

## Industry Trends

Nearly every OEM is working on assisted or autonomous driving

More and more driving assistance functions in mid and premium segment are already available

Safety functions are getting mandatory, e.g. brake assistant, emergency calls, driver recognition

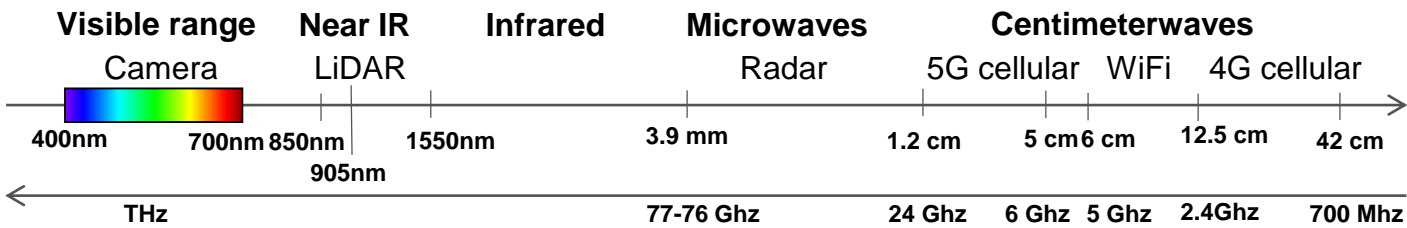
Vehicle to X (V2X) communication functions are in development

Well established electronic companies pushing into automotive sector

Interior designs offer as many digital functions than never before

**Need for reliable high performance sensor-transparent materials**

## Sensor relevant applications



### LIDAR

- Standalone Lidar sensor cover
- Frontend integrated
- Smart roof integrated
- B-Pillar integrated

### RADAR

- Logo with integrated radar function
- Visible exterior radar covers

### OPTICAL INTERIOR SENSORS

- Display integration
- Cover in overhead consoles
- Cover in middle console
- Smart Mirror integration

### ANTENNAS

- Antenna housings C2X, GPS, 4G, 5G, WiFi
- Roof cover in body color
- Upper spoiler shell

## Covestro material solutions

### Makrolon® AG ST

Transparent or dark grey tinted Polycarbonate for exterior use

### Makrolon® AX ST

Black, Infrared transparent Polycarbonate for exterior use

### Makrolon® Ai ST

Transparent, colored, dark grey tinted, for interior use

### Bayblend®

PC+ABS, PC+ASA, several additives, high ductile, low Dk Df, for Antenna covers

### Makroblend®

PC+PBT, PC+PET, mineral filled, low CLTE, low Dk Df, for Antenna covers

# Reference case, mass production of LIDAR Sensor

Makrolon® AX2675 ST, color 978001



© Covestro, 2020

Black opaque LiDAR sensor cover

IR transparency of  $\geq 89\%$  @905nm and 2mm

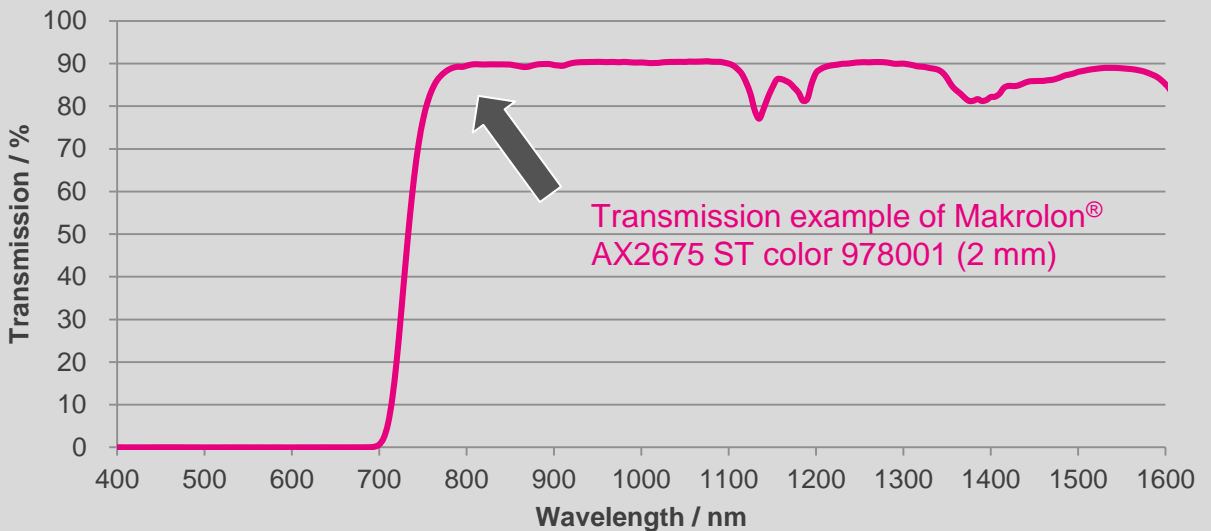
High purity grade

High consistency batch to batch

High impact resistance strength

Proven for Polysiloxane hard coatings for weathering and scratch protection

Inside electrical heating



## Covestro, your innovation partner



**Sensor related engineering know how**



**Application Development support**



**Expertise in surrounding technologies**  
e.g. Coating, Deicing, Film insert molding



**5G, Radar and Laser specific measurement laboratories**



**Dedicated team for sensor related applications**

# TAKING THE AUTONOMOUS, ELECTRIC, AND EFFICIENT GAME TO THE NEXT LEVEL



## Liz Yang

Market Development APAC  
+86 186 1675 2005  
[liz.yang@covestro.com](mailto:liz.yang@covestro.com)

## Tianxiao Ren

Engineering & Processing APAC  
+86 185 1626 3863  
[tianxiao.ren@covestro.com](mailto:tianxiao.ren@covestro.com)

## Philipp Möller

Technical Marketing APAC  
+86 176 0120 5292  
[philipp.moeller@covestro.com](mailto:philipp.moeller@covestro.com)

## Rainer Hagen

Application Development  
+49 214 6009 2837  
[rainer.hagen@covestro.com](mailto:rainer.hagen@covestro.com)

## Mark Torgerson

Technical Marketing Americas  
+1 412 413 4163  
[mark.torgerson@covestro.com](mailto:mark.torgerson@covestro.com)



[www.plastics.covestro.com](http://www.plastics.covestro.com)  
[plastics@covestro.com](mailto:plastics@covestro.com)

The manner in which you use and the purpose to which you put and utilize our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations, are beyond our control. Therefore, it is imperative that you test our products, technical assistance, information and recommendations to determine to your own satisfaction whether our products, technical assistance and information are suitable for your intended uses and applications. This application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety, and environmental standpoint. Such testing has not necessarily been done by Covestro.

Unless we otherwise agree in writing, all products are sold strictly pursuant to the terms of our standard conditions of sale which are available upon request. All information and technical assistance is given without warranty or guarantee and is subject to change without notice. It is expressly understood and agreed that you assume and hereby expressly release us from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance, and information. Any statement or recommendation not contained herein is unauthorized and shall not bind us. Nothing herein shall be construed as a recommendation to use any product in conflict with any claim of any patent relative to any material or its use. No license is implied or in fact granted under the claims of any patent.