

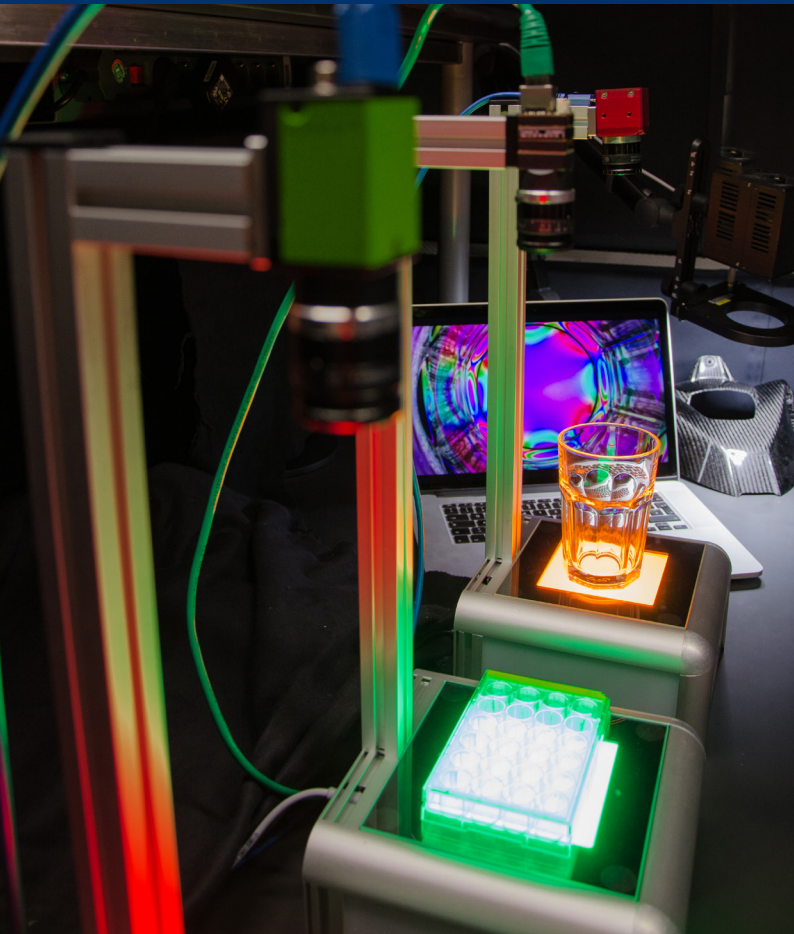


Fraunhofer

IIS

FRAUNHOFER INSTITUTE FOR
INTEGRATED CIRCUITS IIS

APPLICATION CENTER POLARIZATION IMAGING



FRAUNHOFER IIS – THE EXPERTS IN POLARIZATION APPLICATIONS

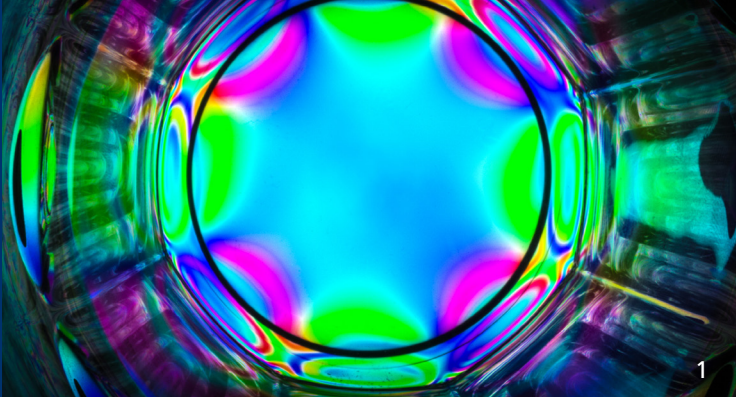
Polarization is becoming increasingly popular as an inspection modality. State-of-the-art polarization cameras can detect polarization information with a single shot, hidden information is revealed, and quality control rises to a whole new level. The method is not without its challenges, however; achieving the right optical setup (e.g. illumination, specific filters) and properly interpreting the data call for an expert touch.

How can you use polarization imaging to your advantage?

Look no further than Fraunhofer IIS with its expertise in polarization imaging for industrial applications. From consulting and feasibility studies to the development of modular software and complete systems, we provide the full range of services from a single source. In addition to polarization imaging, we offer various other modalities for imaging processes tailored to the customer's needs.

Applications

We offer polarization-based solutions for quality control, inline stress inspection and material differentiation. Our real-time capable techniques are compatible with standard polarization cameras.



Stress inspection of glass (image 1)

This modality makes it possible to measure retardation and orientation of residual stress in flat glass and container glass with high spatial and temporal resolution.

Carbon-fiber composites inspection (image 2)

We can detect irregularities and fiber orientation in fabrics, recycled material and finished as well as processed components – with a method patented by the Fraunhofer-Gesellschaft.

Differentiation of various materials of the same color (image 3)

Materials of the same color can be difficult to classify due to the lack of contrast, but they exhibit diverse polarization properties.

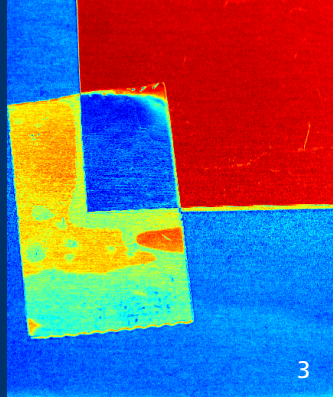
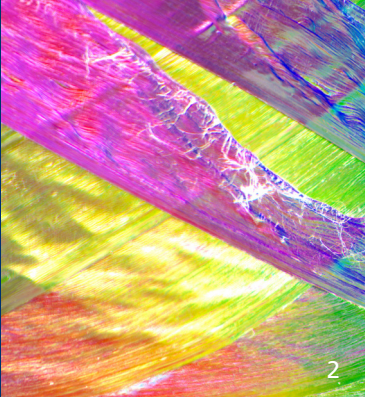
Detection of oil on metal (image 4)

Uniformity of oil or wax coatings on metal as well as oil contamination can be identified by using polarization information.

Inspection of injection molded plastics

Material flow and orientation from injection molding processes can change the polarization direction of light.

Please talk to us to find out if your inspection task can be solved with polarization!



Your advantages at a glance

- We have years of experience in polarization imaging combined with broad expertise in different measurement methods across a wide range of applications.
- Thanks to our collaboration network, we have access to the special domain knowledge and experience needed for the precise analysis of customer problems and their solutions.
- With our fully equipped polarization lab we are able to provide complex proof of concept studies for our customers.
- With our expertise in hardware and software plus AI-based analysis experience, we can provide turnkey software/hardware solutions for various application domains.

Together with Sony, we bring the most recent Polarsens™ imaging technology to your application.

Polarsens

Our polarization imaging services:

Training

Basic principles of polarization imaging and use cases

Feasibility test

Analysis resulting in typical images and initial evaluation (in our polarization lab and on-site with the customer)

Customer-specific consulting

Technical support for individual solutions, analysis of existing processes, concept review, proposals for specific solutions

Customized measurement campaigns

R&D project with detailed analysis and evaluation

System concept

Consulting for technical implementation and concept development: setup, lighting, optics, cameras, software, integration

System design (prototypes & integration):

Implementation in a customer-specific system and support for production ramp-up

Do you have any questions?

We look forward to your request – give us a challenge!

imaging-solutions@iis.fraunhofer.de

www.iis.fraunhofer.de/imaging-solutions

**Fraunhofer Institute
for Integrated Circuits IIS**

Management of the institute
Prof. Dr.-Ing. Albert Heuberger
(executive)
Dr.-Ing. Bernhard Grill

Am Wolfsmantel 33
91058 Erlangen, Germany

Contact:
Dr.-Ing. Michael Schöberl
Phone +49 9131 776-5147
imaging-solutions@iis.fraunhofer.de

www.iis.fraunhofer.de