

Editorial

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Micro-optics for industrial applications

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At conferences on optics and photonics and also when visiting research groups at universities or other scientific institutes, I often meet young graduate and PhD students, on the one hand, working full of energy and enthusiasm on their specific research topic, but, on the other hand, also with doubts about the sense or significance of their own work. Typical questions of these students are: “Is anybody outside the community really interested in what I am doing? Can we solve ‘real’ problems with our work? Or is all what we do just a sort of a scientific game?” When discussing with these students, I frequently notice that some of them have only a very rough idea, which topics in their research field are currently of significance for the related industry. To some degree I also encounter this lack of knowledge about industry-relevant topics in discussions with highly experienced researchers in basic science.

With the focus on micro-optics, this issue of *Applied Optical Technologies* is aiming to shine a light on the ‘other side’, i.e., to present key topics of applied research in today’s industry to a broad audience. Therefore, a selection of tutorials, reviews, letters and regular articles from industrial experts is presented, in which the entire work flow is addressed, comprising theoretical and simulation aspects, manufacturing technologies as well as a broad spectrum of micro-optical applications. The applications discussed include high-end spectroscopy (T. Glaser), laser beam-shaping and homogenization, inevitable for example, for medical treatment or semiconductor manufacturing technology (M. Cumme & A. Deparnay) (D. J. Schertler & P. O. McLaughlin), micro-optics as key enabling elements for mask aligners (R. Voelkel, U. Vogler, A. Bramati, W. Noell)

and LED lighting applications (W. Mönch), as well as diffractive structures as security features (H. Lochbihler).

All the topics presented are already manifested in the application fields of spectroscopy and beam shaping. Furthermore, especially over the last few months, it has been proven that micro-optical components also exert a strong influence on imaging systems for commercial products, well-illustrated by the latest presentation of new photo-lens systems based on diffractive optical components by Canon and Nikon [1–4]. The use of micro-optical elements provide the same or even a better optical performance than conventional systems. Moreover they reduce weight and volume substantially. Therefore, it is very likely that micro-optical approaches will also substantially influence the important field of optical imaging systems in commercial applications.

When reading the articles of this edition, I clearly felt the enthusiasm, but also great satisfaction by the researchers who experienced the transformation of their scientific ideas into real-world products and applications. In that sense, I hope the reader enjoys this issue of *Applied Optical Technologies*.

References

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