

# Challenges in Optical Sensor Module Packaging -Evolving from Past into Future

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## Abstract

When micro-electronics IC was scaling down, precisely following Moore's law, we experienced small changes in device packaging requirements. Packaging technologies were highly standardized. Now, advanced packaging development activities are booming again, mainly driven by the interest of system-in-package applications, the vision beyond Moore's law. Particularly over the last 5 years, optical sensing in the mobile health and biomedical field raised the wave of integrating optical sensors with traditional semiconductor ICs to create compact and high performance systems. Micro and nano photonics devices emerge as part of the signal chain and direct interface with real world. We found ourselves facing requirements that go beyond standard packaging capability. The opto-electro system-in-package integration demands new material and equipment capability, and smart design. The wide spread of consumer and industrial applications puts pressure on lower cost solutions. This presentation gives a few examples of the challenges we face today in packaging biosensor modules and smart industrial sensor modules, and how previous obstacles were overcome to meet stringent customer requirements.

## Biography

Dr. Julia Ying Zhao is currently a senior technical staff at Analog Devices Inc.'s Assembly and Packaging Development department. She has 15 years of experience in the semiconductor packaging industry, and has worked on device packaging for DSPs, converters, imagers, power devices, etc. Her latest interest is opto-electro SiP module development. She has published more than 30 technical papers in the journals and technical conferences, and holds 2 patents in the micro-electronics packaging area. Prior to becoming semiconductor packaging engineer, she was a reliability engineer at Analog Devices, Norwood. Julia holds a Ph.D. degree in Engineering Mechanics from University at Buffalo, and M.S. in Structural Engineering from Tongji University, Shanghai.