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Sommario/riassunto	In this book, the first high-speed silicon-organic hybrid (SOH) modulator is demonstrated by exploiting a highly-nonlinear polymer cladding and a silicon waveguide. By using a liquid crystal cladding instead, an ultra-low power phase shifter is obtained. A third type of device is proposed for achieving three-wave mixing on the silicon-organic hybrid (SOH) platform. Finally, new physical constants which describe the optical absorption in charge accumulation/inversion layers in silicon are determined.