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Nota di contenuto	Part 1: Introduction -- Chapter 1: Introduction To Nanoscale-Confined Propagating Polaritons -- Chapter 2: Experimental and Modelling Techniques -- Part 2 - Enabling Predictive Capabilities For Hyperbolic Polaritons In Van Der Waals Materials -- Chapter 3: Dispersion of Polaritons In Biaxial Slabs -- Chapter 4: Infrared Permittivity Of -Moo3 From Near- And Far-Field Correlative Studies -- Part 3 - Anomalous Optical Phenomena At The Nanoscale In Strongly Anisotropic Media -- Chapter 5: Negative Reflection of Nanoscale-Confined Hyperbolic Polaritons -- Chapter 6: Anomalous Refraction

	And Lensing of Nanoscale- Confined Hyperbolic Polaritons -- Part 4 - Controlling, Directing And Guiding Hyperbolic Polaritons At The Nanoscale -- Chapter 7: Enabling Propagation of Hyperbolic Polaritons Along Forbidden Directions -- Chapter 8: Twist-Optics: Controlling The Propagation of Phonon Polaritons With Twisted Van Der Waals Stacks -- Chapter 9: Active Tuning of Hyperbolic Polaritons In Van Der Waals Materials By Integrating A Gated Graphene Layer -- Chapter 10: Twistable Polaritonics With In-Operando Rotatable Van Der Waals Bilayers -- Chapter 11: Conclusions and Outlook.
Sommario/riassunto	This thesis focuses on the study of phonon polaritons—hybrids of infrared light and lattice vibrations—in van der Waals polar materials, particularly strongly anisotropic (hyperbolic) ones. It combines experiments, analytical theory, and numerical simulations to explore nanoscale optical phenomena that challenge our conventional understanding, such as negative reflection, anomalous refraction and polariton canalization. These studies have paved the way for practical applications in integrated flat optics, such as planar lenses and resonators for nanoscale light. The thesis also introduces the emerging field of twistoptics, aimed at controlling the propagation of light at the nanoscale by stacking slabs of van der Waals materials at different rotation angles, and introduces innovative approaches to tune polariton properties both passively and actively. In addition to providing a solid foundation for future advancements in planar nano-optical devices and helping lay the fundamentals of light-matter interactions in hyperbolic van der Waals materials, the thesis's didactic approach makes complex phenomena accessible to a broad audience.