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标题: Phonon Energy Gaps in the Charged Incommensurate Planes of the Spin-Ladder Sr14Cu24O41 Compound by Raman and Infrared Spectroscopy
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摘要: The terahertz (THz) excitations in the quantum spin-ladder system Sr14Cu24O41 have been determined along the c axis using THz time-domain, Raman, and infrared spectroscopy. Low-frequency infrared and Raman active modes are observed above and below the charge-ordering temperature T-co similar or equal to 200 K over a narrow interval similar or equal to 1-2 meV (similar or equal to 8-16 cm(-1)). A new infrared mode at similar or equal to 1 meV develops below similar or equal to 100 K. The temperature dependence of these modes shows that they are coupled to the charge-and spin-density-wave correlations in this system. These low-energy features are conjectured to originate in the gapped sliding motion of the chain and ladder subsystems, which are both incommensurate and charged.
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