



## Resonance Raman scattering by excitonic polaritons in CuGaS<sub>2</sub>

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<https://doi.org/10.1134/1.1465466>

### Abstract

Resonance Raman scattering by exciton polaritons in crystals of CuGaS<sub>2</sub> under excitation with the 4880 and 4765 Å lines of an Ar<sup>+</sup> laser at 9 K is studied. Lines of one- and two-phonon scattering of excitonic polaritons are found and studied. It is shown that the 1LO and 2LO phonons are arranged in accordance with their energies as the Stokes shifts move farther away from the excitation energy.

### References:

1. V. M. Agranovich and V. L. Ginzburg, *Crystal Optics with Spatial Dispersion and Excitons* (Nauka, Moscow, 1979; Springer-Verlag, New York, 1984), Chap. III.
2. *Light Scattering in Solids III*, Ed. by M. Cordona and G. Guntherodt (Springer-Verlag, Berlin, 1982).
3. S. A. Permogorov, Author's Abstract of Doctoral Dissertation (Leningrad, 1981).
4. B. Bendow, *Polariton Theory of Resonance Raman Scattering in Solids* (Springer-Verlag, Berlin, 1978); *Springer Tracts Mod. Phys.* 82, 89 (1978).
5. S. A. Permogorov, *Phys. Status Solidi B* 68, 9 (1975); *Excitons*, Ed. by M. Sturge, E. Rashba, et al. (North-Holland, Amsterdam, 1982).
6. S. A. Permogorov and V. Travnikov, *Solid State Commun.* 29, 615 (1979).
7. N. Tsuboi, H. Uchiki, H. Jshikawa, and S. Iida, *Jpn. J. Appl. Phys., Suppl.* 32, 584 (1993).
8. N. Tsuboi, H. Uchiki, M. Sawada, et al., *Physica B (Amsterdam)* 185, 348 (1993).
9. M. Susaki, N. Yamamoto, B. Prevot, and C. Schwab, *Jpn. J. Appl. Phys.* 35, 1652 (1996).
10. M. Susaki, K. Wakita, and N. Yamamoto, *Jpn. J. Appl. Phys., Part 1* 38, 2787 (1999).



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2002, Volume 92, Issue 3, pag. 395-401

11. S. A. Permogorov and V. V. Travnikov, *Fiz. Tverd. Tela (Leningrad)* 13, 709 (1971) [*Sov. Phys. Solid State* 13, 586 (1971)].
12. S. A. Permogorov and A. V. Sel'kin, *Fiz. Tverd. Tela (Leningrad)* 15, 3025 (1973) [*Sov. Phys. Solid State* 15, 2015 (1973)].
13. E. L. Ivchenko and A. V. Sel'kin, *Zh. Éksp. Teor. Fiz.* 76, 1837 (1979) [*Sov. Phys. JETP* 49, 933 (1979)].
14. S. A. Permogorov, A. V. Sel'kin, and V. V. Travnikov, *Fiz. Tverd. Tela (Leningrad)* 15, 1822 (1973) [*Sov. Phys. Solid State* 15, 1215 (1973)].
15. S. A. Permogorov, V. V. Travnikov, and A. V. Sel'kin, *Fiz. Tverd. Tela (Leningrad)* 14, 3642 (1972) [*Sov. Phys. Solid State* 14, 3051 (1972)].
16. S. Permogorov and V. Travnikov, *Phys. Status Solidi B* 78, 389 (1976).
17. G. Carlone, D. Olego, A. Jayaraman, and M. Cardona, *Phys. Rev. B* 22, 3877 (1980).
18. M. Bettini and W. B. Holzappel, *Solid State Commun.* 16, 17 (1975).
19. J. P. van der Ziel, A. E. Meixner, H. M. Kasper, and I. A. Ditzenberger, *Phys. Rev. B* 60, 4286 (1974).
20. W. H. Koschel and M. Bettini, *Phys. Status Solidi B* 72, 729 (1975).
21. Nakamura and C. Weisbuch, *Solid State Commun.* 32, 301 (1979).