

**QB03**

**Inelastic Light Scattering Studies of Overdoped  $Y_{1-x}Ca_xBa_2Cu_3O_7$  Film.**

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The vibrational and magnetic Raman excitation spectra were examined in overdoped  $Y_{1-x}Ca_xBa_2Cu_3O_7$  films. Below  $T_c$ , certain phonons in undoped  $YBa_2Cu_3O_7$  (YBCO) show strong self-energy effects, which gradually vanish with increasing Ca concentration into the overdoped regime. The observed  $B_{1g}$  symmetry two-magnon excitation peak near  $2900\text{ cm}^{-1}$  in YBCO is significantly broadened, weakened, and shifts to the lower frequency with increasing Ca content, indicating the effective value of magnetic superexchange energy decreases and that the life time of the magnons becomes shorter with increasing hole concentrations.

**QB04**

**Optical Studies of Weak-ferromagnetic Superconductors  
 $RuSr_2RCu_2O_8$  (R = Nd, Sm, Eu, and Gd)**

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The results of Raman-scattering and infrared reflectivity measurements of  $RuSr_2RCu_2O_8$  (R = Nd, Sm, Eu, and Gd) are presented. These materials are interesting on account of the coexistence of ferromagnetism and superconductivity. At room temperature, several Raman-active phonons are observed and their symmetries identified. The optical constants are estimated by Kramers-Kronig analysis and classical dispersion theory. The temperature dependence of the electronic structures and lattice dynamics of these samples will be discussed.

**REFERENCES**

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