THE OPTICAL SPECTRUM OF ATOMIC CLUSTERS Si_3 and S_3

DAMIAN L. KOKKIN, NEIL J. REILLY, MICHAEL C. McCARTHY, and PATRICK THADDEUS, *Harvard-Smithsonian Center for Astrophysics, 60 Garden St., Cambridge, MA 02138, and School of Engineering & Applied Sciences, Harvard University, 29 Oxford St., Cambridge, MA 02138*; JOHN F. STANTON, *Department of Chemistry & Biochemistry, The University of Texas at Austin, 1 University Station A5300 Austin, TX 78712*.

The optical spectra of the atomic clusters Si_3 and S_3 will be discussed in detail. The jet-cooled 2-colour resonant-2-photon ionisation spectrum of Si_3 has now been detected for the first time in the 530 nm region. For Si_3 a progression in the excited state bending and stretching modes are seen built onto the origin. Lower state frequencies derived from sequence band structure agree with those previously measured for the D_{3h} low lying electronic state.
For thiozone additional experiments were undertaken and progressions in the excited state bending and stretching modes are seen with frequencies of 350 cm^{-1} and 420 cm^{-1} built onto the origin band at 23053.5 cm^{-1} respectively. In this talk our results are compared to theoretical results on both the C_{2v} and D_{3h} forms.