[S02-3] Relation between NIR Slope of RGB Bump to Tip and Metallicity of Galactic Globular Clusters

Jung-Deok Lee, Sang-Gak Lee
Astronomy Program, SEES, Seoul National University

We analysed near-IR (J, J-K_S) color-magnitude diagrams of 30 galactic globular clusters which are close to the Sun using 2MASS J, K_S photometric point-source catalogue data. The magnitudes and (J-K_S) colors of RGB bump and RGB tip for each clusters were measured and then RGB bump to RGB tip slopes(S) for each clusters was derived as ($S=(K_S^{Tip}-K_S^{Bump})\ /\ [\ (J-K_S)^{Tip}-(J-K_S)^{Bump}]$). The linear relation between the slopes and metallicities of galactic globular clusters was derived as $S=8.02[Fe/H]+1.71$ for clusters whose metallicity is [Fe/H]<-1.1 with accuracy 0.17 dex. Metallicity of galactic globular cluster can be obtained without knowing distance and interstellar reddening using this relation.

[S02-4] Metal Oxide Clusters in O-rich Astrophysical Environments: $(CaO)_n$

K.S. Jeong[1], C. Chang[2], D. Suelzle[2], E. Sedlmayr[2], M.G. Lee[1], Y.W. Kang[3]
[1]*Astronomy Program, SEES, Seoul National University, Korea*
[2]*Zentrum fuer Astronomy und Astrophysik, TU Berlin, Germany*
[3]*Department of Astronomy and Space Science, Sejong University, Korea*

The physical properties of inorganic clusters possibly involved in the dust condensation processes from the gas phase in oxygen-rich (O-rich) astrophysical environments have been investigated in this study.

Knowledge of the structure for the metal oxide clusters is of profound importance, since the cluster properties of interest are determined by them. From those properties, we can obtain the information about the thermodynamic and energetic properties of the species required for the dust condensation process.

The electronic and structural properties of low-lying isomers of isolated (CaO)n molecules have been investigated. We report here the total energies, binding energies, harmonic vibrational wavelengths, and the distribution in the gas phase of these molecules.