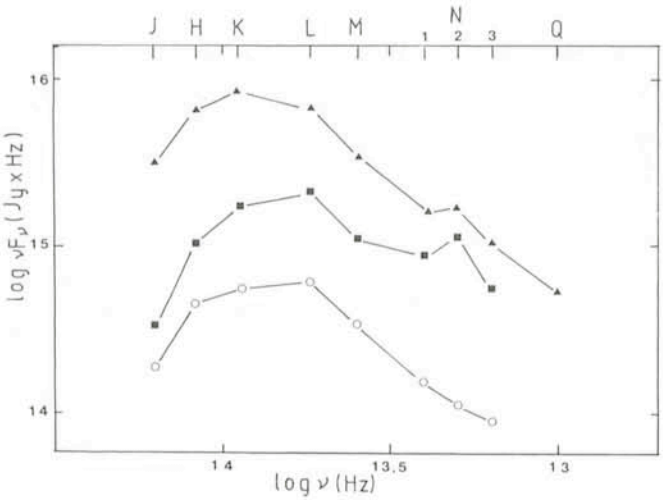

Fig. 3: *Infrared energy distribution of 3 among the reddest objects found in the Valinhos survey: IRSV 1145–6245 (▲), IRSV 1246–6418 (■) and IRSV 1412–5845 (÷ 10) (○). The first two objects clearly exhibit a silicate emission feature at 9.7 micron. They are likely to be oxygen-rich LPVs (observations carried out by T. Le Bertre in December 1984).*

have been designated as IRSV (i.e. Infrared Survey Valinhos) followed by their equatorial coordinates (1950). The complete list and photometric data will be published shortly (Epchtein et al., 1985) and can be supplied on request.

Most of the newly found objects are likely to be late-type stars surrounded by a dust shell. Several objects observed at different epochs have shown a definite variation in the IR bands. They are likely to be long-period variable stars (LPVs). Others, not variable, are more probably very reddened giant or supergiant stars. The reddest objects are represented in a (J–K), (K–L) colour diagram (Fig. 2) together with some well-known infrared stars. No object as red as IRC +10216 has been found yet, but the reddest stars exhibit near IR colours similar to those of sources such as VY CMa (a star which displays a non-spherically symmetric envelope), or V Cyg (a carbon star). It is still rather hazardous on this basis to claim that we have discovered new carbon stars or asymmetrical envelopes, but it is clear that many new variable late-type stars have been found thanks to this survey. They deserve further observations in the visible and in the infrared in order to determine their spectral types, luminosity classes and variability types. Recently, T. Le Bertre observed about 30 very red new objects with the bolometer in the 10 micron bands on La Silla. In several sources he found the typical silicate emission feature at 9.7 micron which characterized oxygen-rich LPVs (Fig. 3); they will be worth observing in radio molecular lines. Finally, the results of the Valinhos survey, combined with the IRC will allow a study of the distribution of the brightest late-type stars in the whole galactic plane. It is also expected to identify some IRAS sources in the region where the space mission was suffering a maximum of confusion.

4. Next Step: A Deep, Complete Near IR Survey?

In a statistical study of the AFGL survey data, Grasdalen et al. (1983) have shown that the stellar populations detected at near IR wavelengths (2–4 μm) and at 10 μm are distinct. For a large class of optically invisible or very faint stellar sources at temperatures ranging between 800 and 2,000 K, ground-based near IR surveys may easily overcome space missions such as IRAS. In the near future, the large gap which separates IR photographical and the 10 μm IRAS surveys could be filled. Our complement to the TMSS was limited in area and sensitivity due to the use of a single detector and the direct mode of detection, but it is expected that a complete ground-based sky survey at 2–3 μm with a limiting K magnitude of 10–12 could be shortly achievable with a multidetector such as an InSb CID array and a 1 metre class telescope.

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References

Epchtein, N., Matsuura O.T., Lépine, J.R.D., Braz, M.A., Picazzio, E., Marques Dos Santos, P., Boscolo, P., Le Bertre, T., Roussel, A., Turon, P.: 1985, *Astron. Astrophys. Suppl. Ser.*, submitted.

Grasdalen, G.L., Gehrz, R.D., Hackwell, J.A., Castelaz, M., Gullixson, C.: 1983, *Astrophys. J. Suppl. Ser.*, **53,** 413.

Kleinmann, S.G., Payne-Gaposchkin, C., 1979: *Earth and Extraterr. Sci.*, **3,** 161.

Neugebauer, G., Leighton, R.B., 1969: Two Micron Sky Survey, (NASA SP–3047).

Nguyen-Q-Rieu, Epchtein, N., Le Bertre, T., 1983: *The Messenger* No. **34,** 16.

Price, S.D., Walker, R.G., 1976, The AFGL Four Color Infrared Sky Survey (AFGL–TR–76–0208).

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363. J. Roland, R.J. Hanisch, P. Véron and E. Fomalont: WSRT and VLA Observations of Very Steep Spectrum Radio Galaxies in Clusters. *Astronomy and Astrophysics.* February 1985.