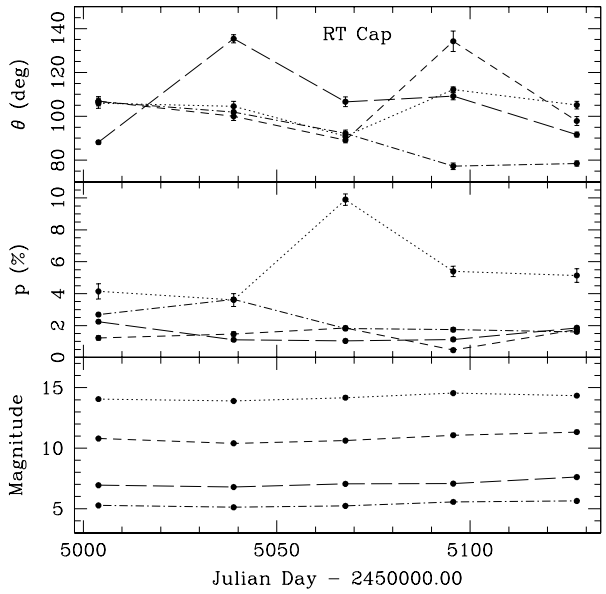

Fig. 9. RT Cap. Brightness, degree, and position angle of polarization as a function of time for U (dotted line), B (short-dashed line), V (long-dashed line), and R (dot short-dashed line) bands.

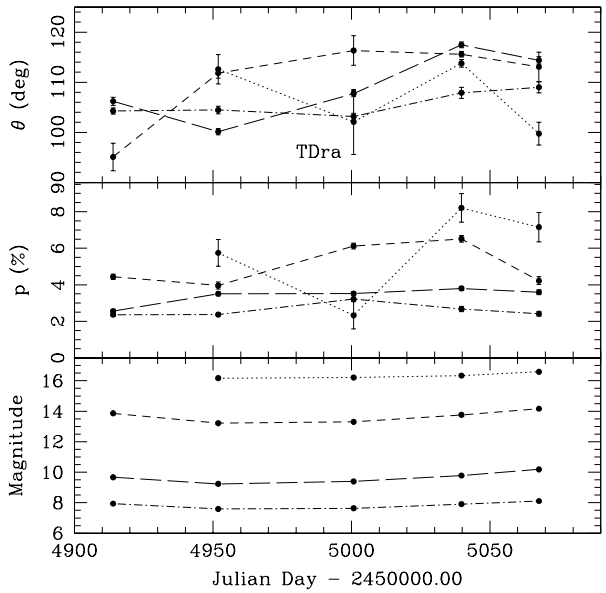

Fig. 10. Same as Figure 9, but for T Dra.

circumstellar dust envelopes around the carbon-rich objects either (Rowan-Robison & Harris 1983). It has been pointed out by Czyzak, Hirth, & Tabak (1982) that graphite formation in circumstellar envelopes is very unlikely and that carbon grains exist, most likely, in some other form, such as amorphous

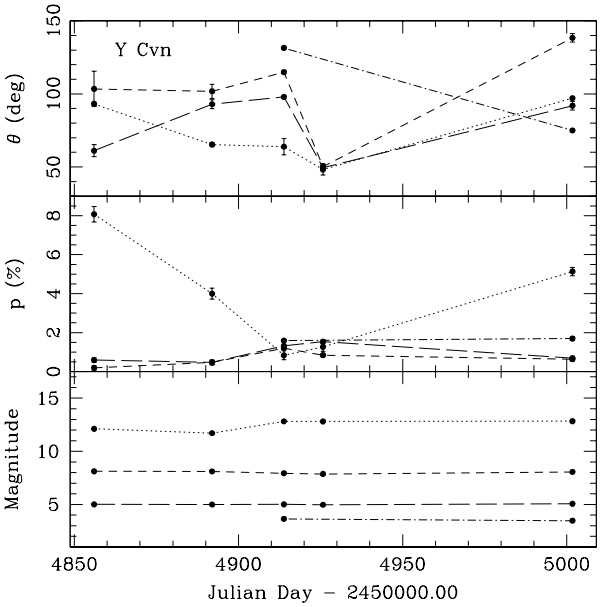

Fig. 11. Same as Figure 9, but for Y Cvn.

carbon. Dust and gas emission models for circumstellar envelopes of evolved carbon stars by Hiriart & Kwan (2000) also show that amorphous carbon grains can better reproduce the observed spectrum in these envelopes.

For Rayleigh scattering, a saturation of the amount of polarization occurs at the wavelength at which multiple scattering becomes important, and is controlled by the optical thickness of the scattering medium. Therefore, Rayleigh scattering may produce a plateau in the polarization as a function of wavelength due to the changes in the local conditions. This effect may explain the wavelength dependence of polarization for RV Aqr, which shows a plateau between the V and B bands.

5. SUMMARY

1. We have presented measurements of linear polarization for eight high-latitude carbon-rich stars in the *UBVR* bands and analyzed the polarimetric variability over time scales of months. Since the observed stars are located at high galactic latitudes, there is evidence for intrinsic linear polarization produced by their circumstellar envelopes, and negligible contribution from the interstellar medium.

2. Although the emission from evolved stars at short wavelengths is very dim, we were able to measured a quite large linear polarization from these stars in the blue and ultraviolet bands.

3. The wavelength dependence seems to be different for each star. However, a common characteristic