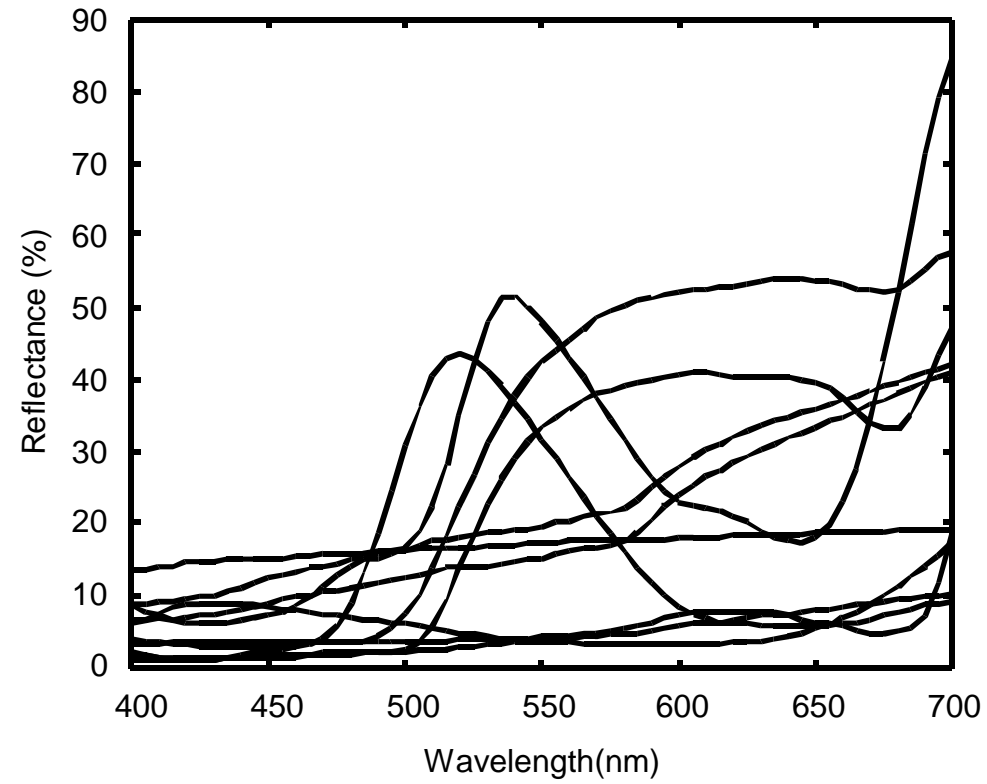Fig. 1 An example of multi-band imaging system.

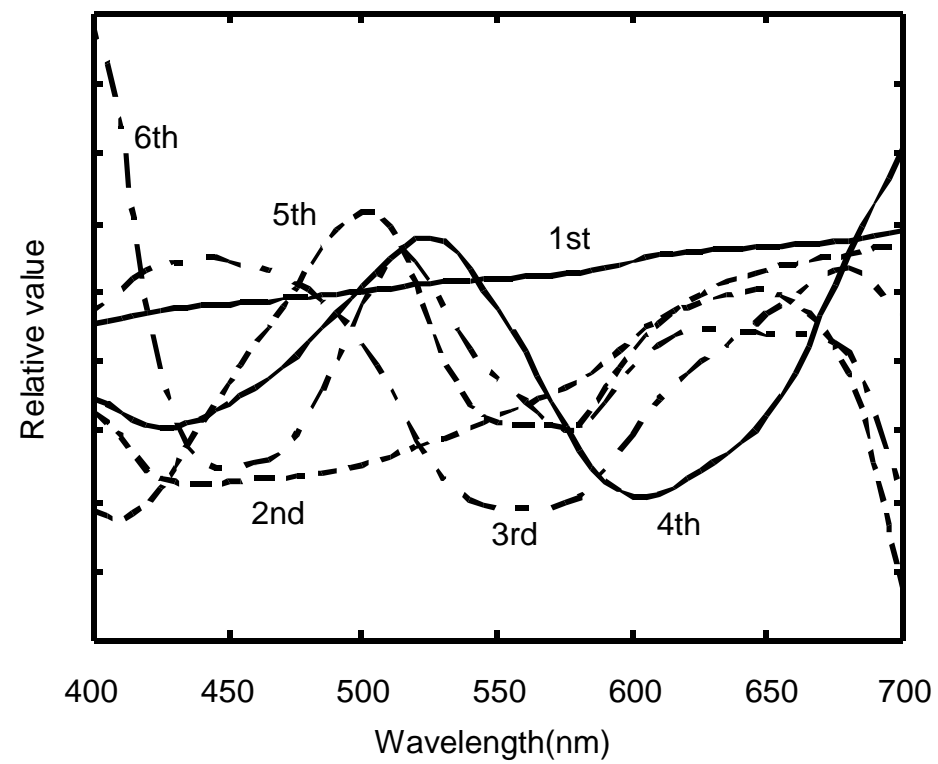Fig. 2 Ten examples of Vrhel's 170 spectral reflectance samples.

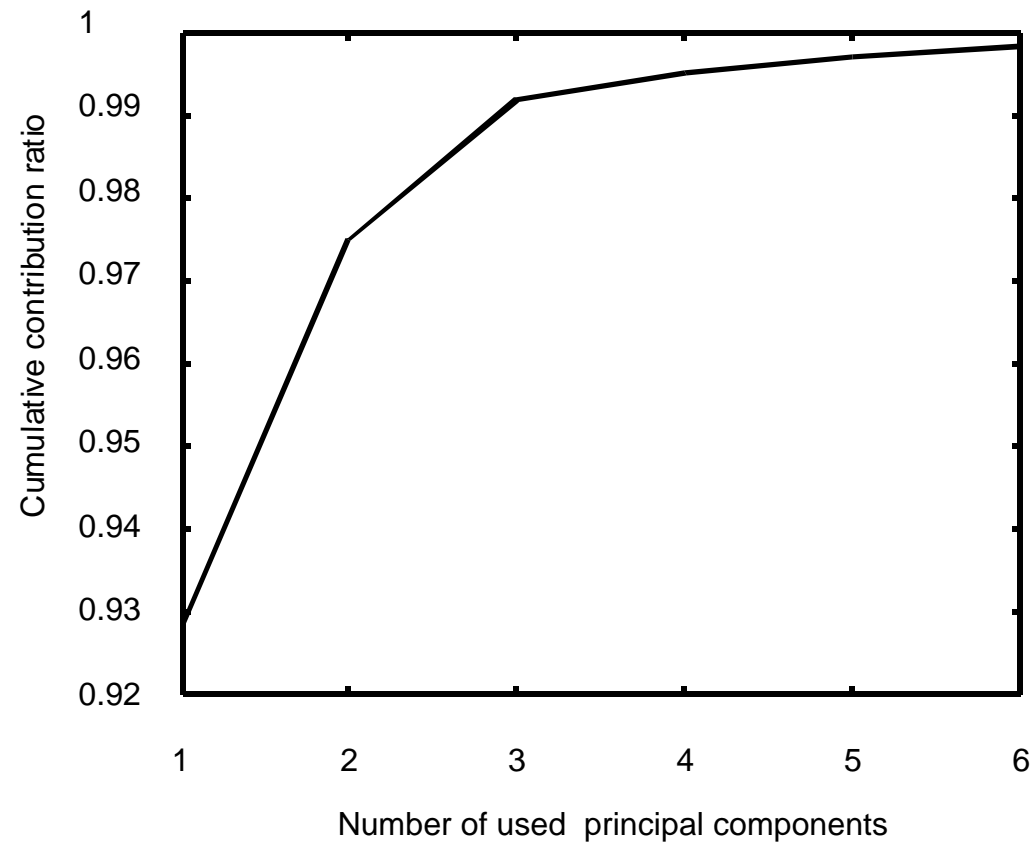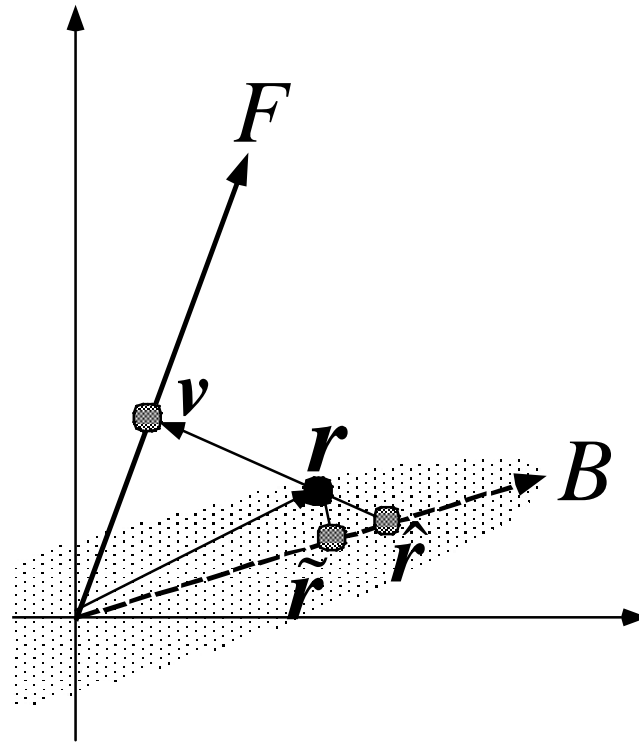Fig. 3 Six principal components of Vrhel's 170 spectral reflectance samples.

Fig. 4 Cumulative contribution ratio of principal components in Vrhel's 170 samples.

Errata

$$\tilde{r} \longleftrightarrow \hat{r}$$

Fig. 5 Schematic chart of the low-dimensional linear approximation and the estimation based the approximation
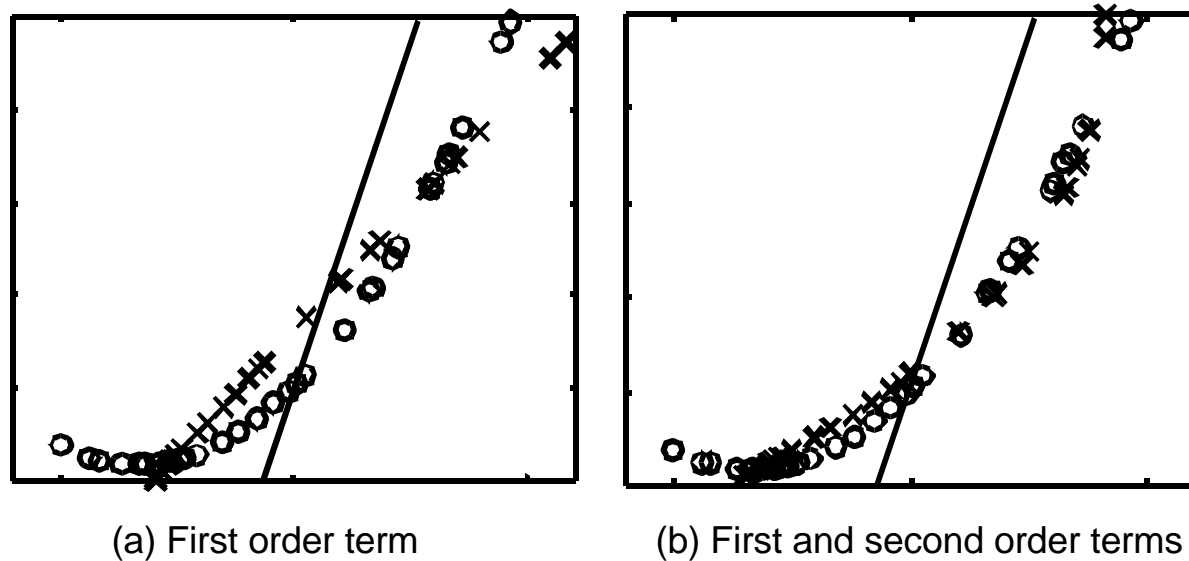
(a) First order term

(b) First and second order terms

Fig. 6 Effectiveness of the higher order terms in proposing estimation technique using the two dimensional vector space; (a)First order terms are used for the estimation, (b)First and second order terms are used. The marks and $\times$ indicate the original and estimated samples, respectively, and the line indicates the projected space.
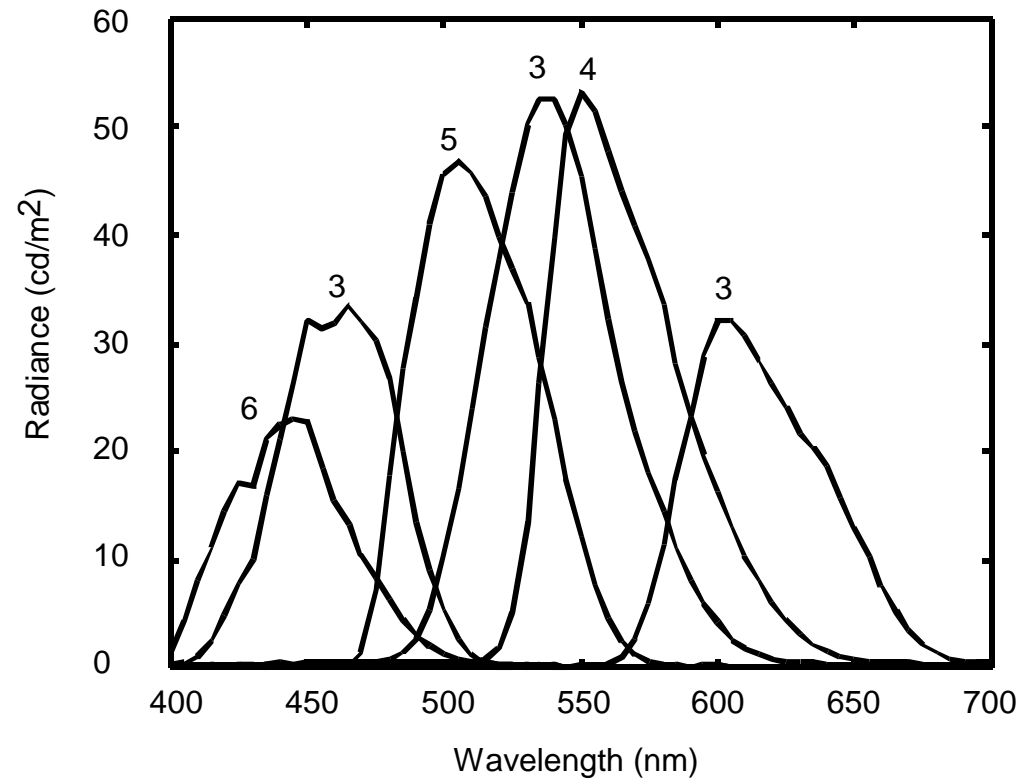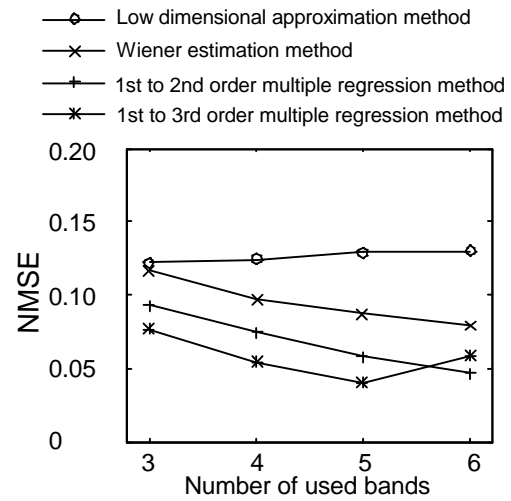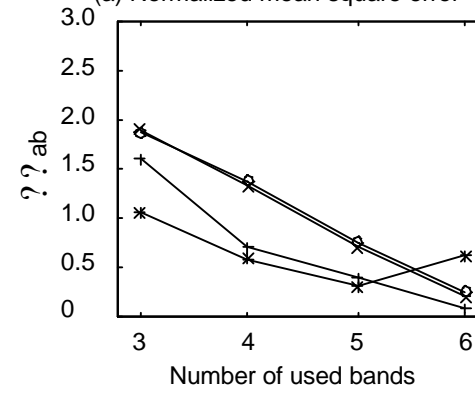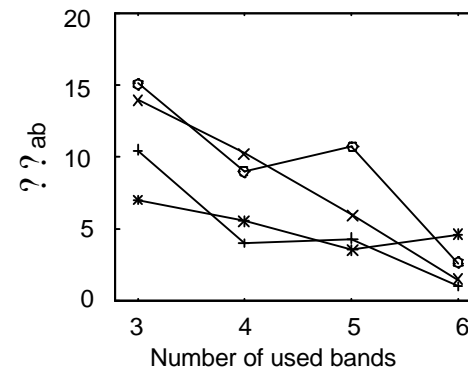
Fig. 7 Total spectral sensitivities of the multi-band system.

Low dimensional approximation method
Wiener estimation method
1st to 2nd order multiple regression method
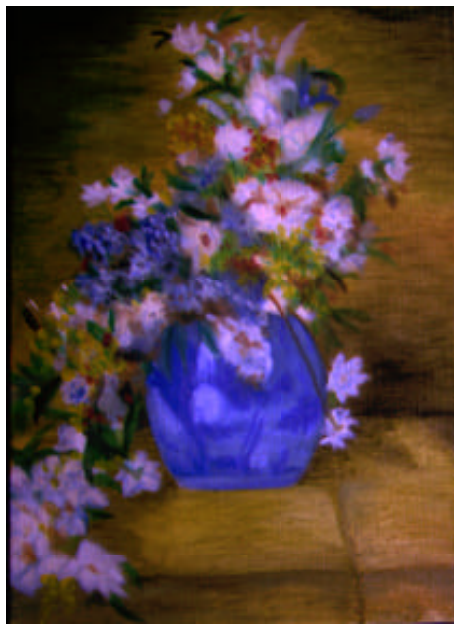1st to 3rd order multiple regression method

(a) Normalized mean square error

(b) Averaged L*a*b* color difference

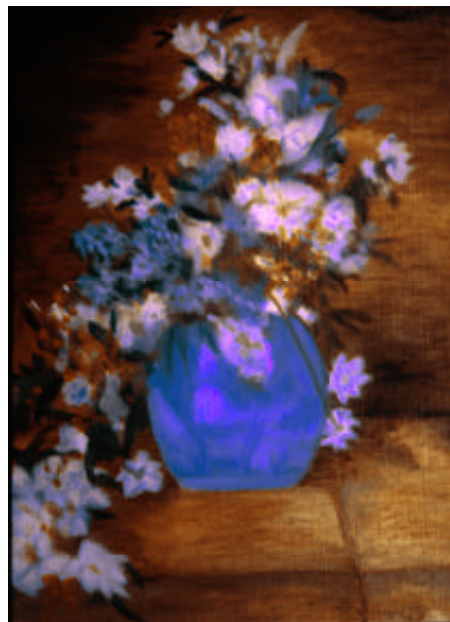(c) Maximum L*a*b* color difference

(a) Original

(b) Low-dimensional approximation method

(c) Wiener method

(d) 1st~2nd order multiple regression method