

## Spectral and angular distribution of light scattered from the elytra of two carabid beetle species

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**Abstract.** Color in living organisms is primarily generated by two mechanisms: selective absorption by pigments and structural coloration, or a combination of both. In this study, we investigated the coloration of cuticle from the wings (elytra) of the two ground beetle species *Carabus auronitens* and *Carabus auratus*. The greenish iridescent color of both species is created by a multilayer structure consisting of periodically alternating layers with different thicknesses and composition which is located in the 1-2  $\mu\text{m}$  thick outermost layer of the cuticle (epicuticle). Illuminated with white light, reflectance spectra in both linear polarisation show an angle-dependent characteristic peak in the blue/green region of the spectrum. Furthermore, the reflected light is polarised linearly. Scattering experiments with laser illumination at 532 nm show diffuse scattering over a larger angular range. The polarisation dependence of the scattered light is consistent with the interpretation of small inhomogeneities as scattering centres in the elytra.