

**Ben-Gurion University of the Negev
Blaustein Institutes for Desert Research**

The Swiss Institute for Dryland Environmental and Energy Research
Alexandre Yersin Department of Solar Energy and Environmental Physics

Manipulation of light by biologically produced crystals: colors, vision and photosynthesis

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Abstract:

The exploitation of light by organisms is widespread, but surprisingly little is known about the crystals involved in light manipulation. Organic crystals with unusually high refractive indices are components of the eyes of various animals. Guanine crystals form mirrors in the eyes of scallops, and crystals of isoxanthopterin are used both as mirrors and light scatterers in the eyes of many crustaceans. Guanine crystals are widely used to produce structural colors, such as the silvery color of fish scales. Some animals produce bright monochrome colors that are tunable. Minerals present in many leaves acts as light scatterers, that introduce photons deep into the leaf and by so doing enhance photosynthesis. Certain marine single celled protists, dinoflagellates, use guanine crystals to scatter light back into their chloroplasts, presumably to improve photosynthetic efficiency. These diverse examples of light manipulation in biology by inorganic and organic crystals, may provide inspiration for better exploiting solar radiation.

Date & Location:

Tuesday, March 5, 2019, 11:00

Lecture room, Physics Building (ground floor)

