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Wide Applications of the Mystery of a Brilliant Butterfly

Metallic blue of *Morpho* butterfly is a physical mystery, because its high reflectivity originates in optical interference, whereas a single color in too wide angular range contradicts the interference. After we have proven the principle of the mystery by reproducing the specific nanostructures of the butterfly's scales, we found the artificial *Morpho*-color to have wide potential applications, because it can provide a brilliant single color in wide angular range with high reflectivity without chemical pigment, which is resistant to fading caused by chemical change for long time. We have recently developed various techniques for applications of the specific color.

CV

After studied surface physics at the Univ. of Tokyo (Ph.D. in 1994) using Synchrotron Radiation (SR), Akira Saito worked at the European Synchrotron Radiation Facility (Grenoble, France) with French Government Scholarship and at KEK (Japan) to study surface structures with atomic resolution using X-rays. He moved to Osaka Univ. close to an advanced SR facility (SPring-8) in 1997, and he is associate professor from 2008. His research interests span the photon-nanomatter interactions, including the analysis and control of the nanostructures on surface of materials, elemental analysis, scanning probe microscopy, SR. One of the recent developed fields is the bio-mimetic applications of the optical nanostructures. Also he is a member of ISO (TC266), committee for biomimetics.