Micro- and Nano- Structures in Pterostigma of Dragonfly

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The sections of the pterostigma of a dragonfly (Crocothemis servilla Drury) are observed through *FEG-ESEM*, and interesting nano fibrous multilayered structures are discovered: It can be seen that the pterostigma is a structure with internal empty space. The outer contour of the cross-section is a curved polygon. The sleeve-like pterostigma has a center layer with the thickness of 2~3*um*. The center layer is composited by more than twenty ultra-thin nano layers with the thickness of 90~150*nm*. Every ultra-thin nano layer is formed by parallel nano fibers adhered one-by-one. The pterostigma of dragonfly wings has multiscales structure: nanofibers (nanometer diameters) → nano-layers (nanometer thicknesses) → multilayered structures composited by nano-layers (micrometer thicknesses) → multilayered tubular or sleeve-like composite structure (macroscopic thickness).The marvelous nano fibrous multilayered structure provides reference for mankind to understand better the function of the pterostigma and to improve better the bionics manufactures.

Keywords: Dragonfly, Pterostigma, Nano Structures