



Image credit: NASA Langley

Materials and Coatings

Novel Copolyimide Surface Modifying Coating

Novel aircraft wing coating to prevent the accumulation of insect residue and to improve fuel economy

NASA's Langley Research Center has developed a coating material made of a novel copolyimide containing surface modifying agents that is designed to prevent the accumulation of insect residue on aircraft wings. These residues have the potential to significantly disrupt laminar air flow over the wings and eliminating them can reduce air resistance and improve fuel economy.

BENEFITS

- ➔ Improves fuel efficiency in aircraft by eliminating residues that disrupt laminar flow over the wings
- ➔ The active surface modifying agents in the coating migrate to the air surface, but do not evaporate or otherwise need replacement
- ➔ Potential use to keep other surfaces clean of insect residue, such as automobiles

APPLICATIONS

- ➔ Aircraft Wing Surfaces
- ➔ Motor Vehicles
- ➔ Reduce surface imperfections on other low friction or non-stick surfaces

technology solution

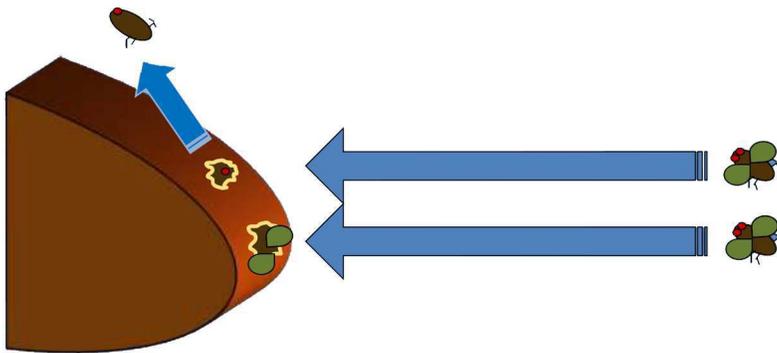


NASA Technology Transfer Program

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THE TECHNOLOGY

Accumulation of undesirable species such as insect residue is mitigated by use of copolyimide coatings incorporating fluorine and silicon surface modifying agents (SMAs) in a novel chemical formulation. The coating minimizes adhesion while at the same time maintaining the bulk properties of the polyimide coating. The specific SMAs used here are designed to be thermodynamically drawn to the coating surface. Further, the SMAs react chemically with the polymer backbone and are thus chemically bonded, so the SMAs will not evaporate or migrate out of the coating material. The coating adheres well to a range of relevant materials, including aluminum, composites and plastics.



NASA's unique coating is designed to prevent the accumulation of insect residue on surfaces. Image credit: NASA Langley

PUBLICATIONS

Patent Pending

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NP-2016-09-2201-HQ

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LAR-18540-1

