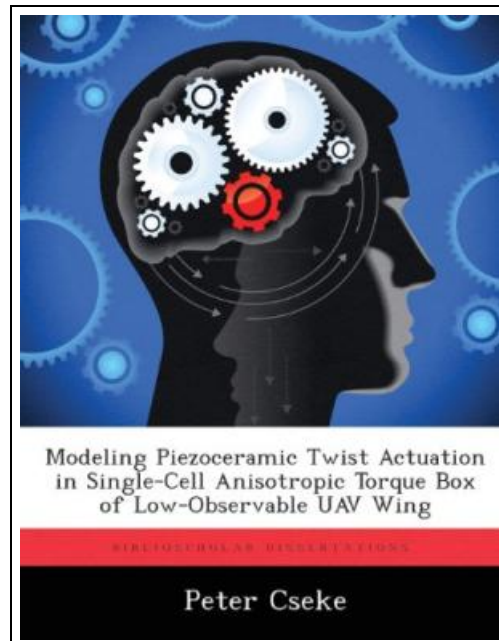


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Reviews

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(Dr. Marvin Deckow)

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Bibloscholar, United States, 2012. Paperback. Condition: New. Language: English . Brand New Book ***** Print on Demand *****.The reduction of an aircraft s radar cross section can increase its survivability in hostile airspace by making it more difficult to locate and track by enemy radar. Replacing articulated flight control surfaces with adaptive controls will reduce surface discontinuities, and enhance low observability. Actuation of the aerodynamic surfaces is achieved by an electric field applied to PZT actuators embedded in the top and bottom skins, creating differential strain and shear in the host substrate. This creates torsion about the elastic axis, and a change in the wing lift coefficient. The torsion of the designed baseline UAV s wing torque box was modeled in the presence of a full complement of air-loads by extending the Bredt-Batho theorem. This was accomplished through modifying Libove s method, using a thin-walled, linearly elastic, fully anisotropic, trapezoid cross-section beam. The linear tip twist angles due to a uniform cross-sectional moment were verified using the isotropic Bredt-Batho theorem, and published anisotropic results by applying isotropic, then anisotropic laminate elastic properties. The isotropic solutions were within 3.1 ; the anisotropic results were within 6.9-10.9 of the published angles. The PZT actuation of the host structure was achieved by substituting the PZT-composite laminate elastic properties into the derived solution and inducing strain and shear of the PZT lamina by applying an electric field, without the presence of external forces or moments. Using two different PZT laminae, the angular twist as a function of the host lamina orientation angle and applied voltage was recorded.



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