



APCVD SiCxOy Deposition as Na Barrier Layers for TCO/Low-E Glass Coatings **Symposium BB: Green Chemistry in Research and Development of Advanced Materials**

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We report on the experimental investigation of the use of Sixtron Advanced Materials Silane-free gas generation system to deposit a transparent SiCxOy Na diffusion barrier and anti-reflection film onto glass sheets with an APCVD deposition process. SiCxOy thin films (50-250nm thickness) with a tunable index of 1.65-1.75 are currently being deposited by APCVD On-Line float glass coating systems depositing TCO (Transparent Conductive Oxide) coatings (both for Low-E windows and for solar panel manufacturing applications) using, for example, gaseous Silane (SiH₄), Propane and Oxygen. They are critical for achieving high conductivity and to improve the longevity of the TCO coating performance and act both as Na-diffusion barrier layer and anti-reflection single layer film having an intermediate index. Sixtron's gas generation system uses a solid that is safe for shipping and thus removes many of the safety concerns involved with shipping and exchanging hazardous Silane gas cylinders at the thin film production site. A successful transfer of this alternative Si-precursor material to the proprietary **CVDgCoat™**; APCVD coating platform would enable the manufacturing and operation of safer and lower cost On-line and Off-line APCVD thin film glass coating systems for the fast growing coated glass sheet market driven by the growing alternative energy demand for both energy saving and energy generation material.