

**ADVANCED NANOSTRUCTURED MATERIALS a-Si_xC_{1-x}:H/Me FOR THE PHOTOTHERMAL
CONVERSION OF SOLAR ENERGY**

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Advanced nanostructured materials a-Si_xC_{1-x}:H/Me are deposited by a combined physical vapor deposition/plasma enhanced chemical vapor deposition process (PVD/PECVD). In-situ photoelectron spectroscopy (XPS/UPS) gives information on the chemical composition and the electronical properties of those films, leading to a structure model for the film morphology. The optical properties of the deposited thin films are determined by spectrophotometry, and can be tuned in a large range by varying the metal content. By incorporating silicon into the nanostructured thin films, a breakthrough in heat resistance has been achieved. The latter is crucial for the application as optical selective solar absorber coatings for photothermal conversion of solar energy.

TOPICS + KEYWORDS: Nanostructured Materials, Plasma Enhanced Chemical Vapor Deposition, Reactive Magnetron Sputtering, Photothermal Devices, Selective Absorber Coating