

# Development of solar selective surfaces for photothermal applications

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## ABSTRACT

Energy conversion surfaces of photothermal devices are fabricated from solar selective materials which satisfy two major criteria: high absorptance in the visible range and low emittance in the infrared range of the solar radiation. Various types of metal oxides e.g., Mn CoO, NiCoO, CuCoO etc and nitrides e.g., TiN, TiAlN, TiAlSiN etc based thin film coatings are widely used as selective surfaces [1-2]. The sol-gel dip coating method is a promising technique to synthesize metal oxides based solar selective coatings since their optical characteristics can be controlled by varying deposition parameters [3-6]. In this paper, we emphasize on the developments of some metal oxides and nitrides based thin film coatings for the selective surface applications and summarize the optical and mechanical properties of recently studied results. Utilizations of relevant analytical equipments such as UV-Vis-NIR spectrophotometer, FTIR spectrophotometer, and nanoindentator are highlighted. Sol-gel derived CuCoO thin film coatings offer a highest selectivity value of 15.1 while the magnetron sputtered metal nitride coatings found to exhibit a maximum selectivity of 21.76.

## References

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