



**INVESTIGATION INTO THE DEPOSITION TECHNIQUES AND  
COATINGS FOR SOLAR THERMAL AND PHOTOVOLTAIC  
COLLECTORS**

by  
**Demetris Symeou**

Project Report

Submitted to

the Department of Mechanical Engineering

of the Higher Technical Institute

Nicosia Cyprus

in partial fulfillment of the requirements

for the diploma of

**TECHNICIAN ENGINEER**

in

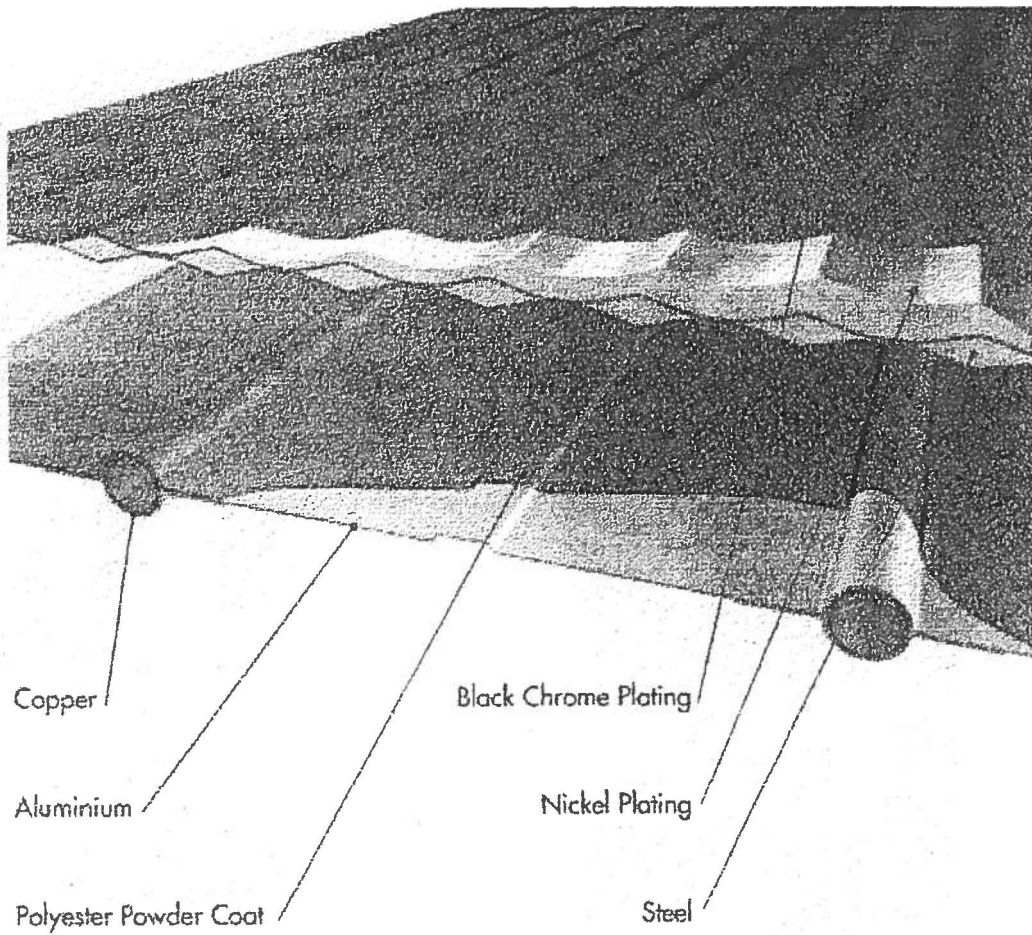
**MECHANICAL ENGINEERING**

M / 936

June 2001

HIGHER TECHNICAL INSTITUTE	PROJECT NO. 3299
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## ABSTRACT

The project addresses the significance of selective surfaces in the context of photovoltaic and solar thermal systems. Various selective surfaces are now in commercial use and several methods of preparing selective surfaces have been developed which depend on various mechanisms, compositional and microstructural characteristics to control selectivity. All the aforementioned parameters will be shown by example and a novel deposition method of nanostructured powders will be introduced. Nanostructured coatings can accommodate a wide spectrum of compositional constituents with unique microstructural features.

The initiation of this project falls within the activities of the Nanomaterials Research Center (NRC), a newly established center at HTI which serves as a bridge for technology transfer between HTI and the technology users (industry at large). The primary mission of NRC is to develop new methods for the economical production of nanostructured metals, ceramics, and their composites.

Current research is focused on methods for the production of nanostructured powders, nanophase coatings (wear resistant surfaces, thermal barriers, solar cell fabrications, selective surfaces) and nanophase composites (gas turbine engines, bulletproof vests).

Under this center, two operating divisions have been established, each with its own application goal(s) and commercialization strategy: (1) nanopowder synthesis, which is commercializing high rate production of non-agglomerated nanoparticles and (2) large area deposition of coatings. Both of the divisions focus on the commercialization of advanced materials processes for enhanced mechanical and thermal properties.

## **ACKNOWLEDGEMENTS**

I would like to express my appreciation to Dr I. Michaelides, Senior Lecturer at the H.T.I. and Dr N. Angastiniotis, Lecturer at the H.T.I. for their guidance and assistance during the preparation of this work.

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