

Paper ID: ICRAITMS\_202012\_182

## A STUDY ON MARKETING OPPORTUNITIES IN CORPORATE HOSPITALS (With special reference to select hospitals in Visakhapatnam, Andhra Pradesh)

<sup>1</sup> Dr.D.Venkateswarlu

<sup>2</sup> Dr.M.Doraswamy Naik

<sup>3</sup> Dr.A.Adishesha Reddy

<sup>1</sup> Associate Professor, School of Management Studies, Lakireddy Bali Reddy College of Engineering (Autonomous), Mylavaram-521 230, Krishna Dist., Andhra Pradesh,

Indiavenkateswarlu.denduluri@gmail.com

<sup>2</sup> Lecturer in Commerce, S.B.V.R. Degree College, Badvel, Kadapa District, AP, India

moodedora@gmail.com

<sup>3</sup> Professor & HOD, School of Management Studies, Lakireddy Bali Reddy College of Engineering (Autonomous), Mylavaram-521 230, Krishna Dist., Andhra Pradesh, Indiaasrappidi@gmail.com

### ABSTRACT:

The necessity and importance of corporate hospitals is increasing day to day in a developing country like India, where majority of the population is middle class. Unless the government and private enterprises create various marketing schemes, it is difficult for them to meet in an unexpected situation. This paper mainly focuses on innovating new avenues for both patients and hospitals or health care services provided by government for ease of making this delivery process affordable to both the parties.

**Key words:** Marketing opportunities – Health care services – Affordable prices – New business model – changing life styles



Organized by Departments of Mechanical, Civil, Humanities & Sciences and I.T.E. at St Martin's Engineering College ([www.smec.ac.in](http://www.smec.ac.in))

  
PRINCIPAL  
S.B.V.R. DEGREE COLLEGE  
BADVEL-516 227, Kadapa Dist.

ISBN: 978-93-82829-41-6

## A STUDY ON MARKETING OPPORTUNITIES IN CORPORATE HOSPITALS (With special reference to select hospitals in Visakhapatnam, Andhra Pradesh)

<sup>1</sup> Dr.D.Venkateswarlu    <sup>2</sup> Dr.M.Doraswamy Naik    <sup>3</sup> Dr.A.Adishesha Reddy

<sup>1</sup> Associate Professor, School of Management Studies, Lakireddy Bali Reddy College of Engineering (Autonomous), Mylavaram-521 230, Krishna Dist., Andhra Pradesh, [Indiavenkateswarlu.denduluri@gmail.com](mailto:Indiavenkateswarlu.denduluri@gmail.com)

<sup>2</sup> Lecturer in Commerce, S.B.V.R. Degree College, Badvel, Kadapa District, AP, [India moodedora@gmail.com](mailto:India moodedora@gmail.com)

<sup>3</sup> Professor & HOD, School of Management Studies, Lakireddy Bali Reddy College of Engineering (Autonomous), Mylavaram-521 230, Krishna Dist., Andhra Pradesh, [Indiaasrappidi@gmail.com](mailto:Indiaasrappidi@gmail.com)

*Abstract: The necessity and importance of corporate hospitals is increasing day to day in a developing country like India, where majority of the population is middle class. Unless the government and private enterprises create various marketing schemes, it is difficult for them to meet in an unexpected situation. This paper mainly focuses on innovating new avenues for both patients and hospitals or health care services provided by government for ease of making this delivery process affordable to both the parties.*

*Key words: Marketing opportunities – Health care services – Affordable prices – New business model – changing life styles*

### INTRODUCTION TO MARKETING OPPORTUNITIES IN CORPORATE HOSPITALS

The increase in the number of corporate hospitals, the stiff competition among the different kinds of health care services and providers, the sophistication of technology in the field of medicine, the blowout of new type of diseases among the people causing anxiety in locating the right service providers, and a host of other reasons created the necessity of making hospital services to be perceived as potential for marketing opportunities. In this connection, after 1990, by following the footsteps of developed countries, India and Indian corporate hospitals started creating brand image to

their hospitals by explaining salient features of various kinds of treatments that are provided by them to different segmented people to create health assurance to them. We cannot diminish the role of researchers, policy makers and media to take this awareness forward and also conferences, workshops and seminars are conducted by the stakeholders for their mutual benefit.

#### Service orientation

When medical services falls under service category, it is a critical combination of both tangible and intangible aspects and of course in service marketing, intangible features are dominated by



PRINCIPAL  
S.B.V.R. DEGREE COLLEGE  
BADVEL-516 227, Kadapa Dist.



International Conference on "Recent Advances & Innovations in Technology, Management & Applied Sciences

3. Dr. G Krishna Mohan and Dr. C.N. Krishna Naik, (2006) Healthcare Marketing - Discovery Publishing House, New Delhi, ISBN No. 81-8356-122-5
4. Government of India, The National Health Policy, Ministry of Health and Family Welfare, New Delhi, 2005
5. Healthcare System in India, National Institute of Health and Family Welfare, New Delhi, 2005.
6. Basavanthappa BT., Nursing Administration, Second Edition, Jaypee Brothers Medical Publishers (P) LTD., New Delhi 2009
7. Dr.Parvez A. Mir (November 2011), "An empirical investigation in Delivering Quality Healthcare services to patients", Indian Journal of Marketing Vol. 41 No. 11, ISSN: 0973-8703
8. Dy. Satya Suresh (March 2011), "Promoting Health services in India: An Exploratory study on the Role of specialty and Corporate Hospitals in Bangalore", Indian Journal of Marketing Vol. 41 No. 03, ISSN: 0973-8703
9. Dr. S. P. Rath , Dr.Biswajit Das, Hemant Gokhale, Rushad Kavina(2011), Medical Tourism" – The New Trend of Revenue Generation: Impacts on Indian Economy and The Global Market Response, In International Journal of Research in Commerce, Economics & Management, Volume No. 1), Issue No. 5 (September) ISSN 2231-4735, Page No.61-70
10. Acharyulu, G.V.R.K(Sept - 2011),Medical Tourism – Strategy for Global Healthcare Outsourcing, International Journal Of Management Research and Review, Volume – 1, Issue-2 , Article No-3, , ISSN 2249-7196,Page No. 28-41
11. Anand N. Badwe, Purushottam A. Giri, Ramchandra G. Latti (2012) "Medical Tourism in India: A New Avenue" International Journal of Biomedical and Advance research Volume 03, No. 03 ISSN: 22293809, Page nos. 144-148
12. Jha S.M., Services Marketing, New Delhi, Himalaya Publishing House, 2013.

**Websites:**

shodhganga.inflibnet.ac.in  
www.articlesbook.com  
www.google.co.in



  
PRINCIPAL  
S.B.V.R. DEGREE COLLEGE  
BADVEL-516 227, Kadapa Dist.

# Sputtering pressure influenced structural, electrical and optical properties of RF magnetron sputtered MoO<sub>3</sub> films

S. SUBBARAYUDU<sup>1,\*</sup>, K. VENKATA SUBBA REDDY<sup>1</sup>, S. UTHANNA<sup>2</sup>

<sup>1</sup>Department of Physics, S.B.V.R. Degree College, Badvel-516 227, India

<sup>2</sup>Department of Physics, Sri Venkateswara University, Tirupati-517 502, India

MoO<sub>3</sub> films were deposited by RF magnetron sputtering technique on glass and silicon substrates held at 473 K by sputtering of metallic molybdenum target at an oxygen partial pressure of  $4 \times 10^{-2}$  Pa and at different sputtering pressures in the range of 2 Pa to 6 Pa. The influence of sputtering pressure on the structure and surface morphology, electrical and optical properties of the MoO<sub>3</sub> thin films was studied. X-ray diffraction studies suggest that the films deposited at a sputtering pressure of 2 Pa were polycrystalline in nature with mixed phase of  $\alpha$ - and  $\beta$ -phase MoO<sub>3</sub>, while those formed at sputtering pressure of 4 Pa and above were of  $\alpha$ -phase MoO<sub>3</sub>. Scanning electron micrographs showed a decrement in the size of the particles and their shapes changed from needle like structure to dense films with the increase of sputtering pressure. Fourier transform infrared spectroscopic studies confirmed the presence of characteristic vibration modes of Mo=O, Mo-O and Mo-O-Mo related to MoO<sub>3</sub>. Electrical resistivity of the MoO<sub>3</sub> films decreased from  $6.0 \times 10^4 \Omega \text{ cm}$  to  $2 \times 10^4 \Omega \text{ cm}$  with an increase of sputtering pressure from 2 Pa to 6 Pa, respectively. Optical band gap of the films decreased from 3.12 eV to 2.86 eV with the increase of sputtering pressure from 2 Pa to 6 Pa, respectively.

Keywords: MoO<sub>3</sub> thin films; RF magnetron sputtering; sputtering pressure; structural properties; optical properties

## 1. Introduction

In recent years, much attention has been focused on the technological use of molybdenum oxide (MoO<sub>3</sub>) thin films for device applications because of their structural, electrical and optical properties. Molybdenum oxide in thin film form exists in orthorhombic  $\alpha$ -phase, monoclinic  $\beta$ -phase and hexagonal structure. Among these phases, orthorhombic  $\alpha$ -phase is the most stable. In this phase, the Mo<sup>6+</sup> ion is linked to three oxygen atoms in a strongly distorted octahedral environment. MoO<sub>3</sub> in thin film form is a potential candidate for sensing of ethanol, ammonia, oxygen, carbon monoxide and nitrogen oxide gases [1–8], solid state microbatteries [9, 10], catalysis [11, 12], electrochromic devices [13–15], solar cells [16–18] and light emitting diodes [19–21]. Physical properties of MoO<sub>3</sub> films depend mainly on the structure and surface morphology as well as an excess or deficient oxygen which controls the electrical

and optical properties. Various thin film deposition techniques, namely thermal evaporation [18, 22–24], electron beam evaporation [25], pulsed laser deposition [26, 27], chemical vapor deposition [7], electrodeposition [28, 29], spray pyrolysis [30–33], sol-gel process [8, 34–36], DC magnetron sputtering [37–39] and RF magnetron sputtering [2, 40–42] have been used for the preparation of MoO<sub>3</sub> thin films. Physical properties of deposited films critically depend on the deposition method and the process parameters fixed during the growth of the films. Among these techniques, RF magnetron sputtering is a versatile method for deposition of MoO<sub>3</sub> films on large area and at low substrate temperatures. In RF magnetron sputtering, physical properties of the films mainly depend on the sputtering parameters, such as oxygen partial pressure, substrate temperature, bias voltage, sputtering power and sputtering pressure. The post-deposition annealing leads to a change in the structure, electrical and optical properties. A precise control of the deposition conditions leads to the growth of films with required physical properties.

\*E-mail: srsuguru.phy@gmail.com



*Kw*  
PRINCIPAL  
S.B.V.R. DEGREE COLLEGE



# Structural, Morphological and Optical Properties of Bias Sputtered MoO<sub>3</sub> Films

S. SUBBARAYUDU\* AND K. VENKATA RAO

Department of Physics, S.B.V.R. Degree College, Badvel, India. srsuguru.phy@gmail.com

**Abstract:** Molybdenum oxide (MoO<sub>3</sub>) films were deposited by RF magnetron sputtering of molybdenum target on unheated glass and silicon substrates in an oxygen partial pressure of  $4 \times 10^{-2}$  Pa and at different substrate bias voltages in the range from 0 V to -150 V. Effect of substrate bias voltage on the structural, morphological and optical properties of the MoO<sub>3</sub> films was investigated. XRD studies indicated that the films formed on unbiased substrates were amorphous. Polycrystalline with  $\alpha$ - phase MoO<sub>3</sub> were achieved at substrate bias voltage of -150 V were of mixed phase of  $\alpha$ - and  $\beta$ - phase MoO<sub>3</sub>. The microstructure of the films transforms into needle like structure when deposited at higher substrate bias voltages. The optical band gap of the films increased from 3.03 eV to 3.12 eV and refractive index increased from 2.02 to 2.12 with increase of bias voltage from 0 V to -100 V.

**Keywords:** Molybdenum oxide thin films, RF magnetron sputtering, Bias voltage, Structural, Morphological, Optical properties.

## I. INTRODUCTION

Among these transition metal oxides, molybdenum oxide (MoO<sub>3</sub>) have much importance in sensing of ethanol [1], nitrogen oxide [2] and carbon monoxide gases [3], solid state microbatteries [4], catalyst [5], electro-chromic devices [6], and solar cells [7] and light emitting diodes [18-20]. Different thin film physical deposition techniques such as thermal evaporation [8], pulsed laser deposition [9], electrodeposition [10], DC magnetron sputtering [11] and RF magnetron sputtering [12] for the preparation of MoO<sub>3</sub> thin films. The influence of sputter power on the structural and optical properties of molybdenum oxide films were earlier reported [13]. In the present investigation, MoO<sub>3</sub> films were deposited by RF sputtering at various substrate bias voltages in the range from 0 V to -150 V. The influence of substrate bias voltage on the structural, morphological and optical properties of the MoO<sub>3</sub> film were studies systematically and presented the results.

## II. EXPERIMENTAL

MoO<sub>3</sub> films were deposited on glass and silicon substrates by RF magnetron sputtering method. The sputter system pumped by diffusion and rotary pump combination to produce ultimate pressure of  $2 \times 10^{-6}$  mbar. Pure molybdenum of 50 mm diameter and 3 mm thickness was used as sputtering target. The required quantities of oxygen and argon gases were admitted into the sputter chamber through fine controlled needle valves. MoO<sub>3</sub> films were formed at different substrate bias voltages in the range from 0 to -150 V, at fixed oxygen partial pressure of  $4 \times 10^{-4}$  mbar and sputter pressure of  $4 \times 10^{-2}$  mbar. Thickness of the films was measured using Veeco Dektak depth profilometer. X-ray diffraction was used to determine the crystallographic

structure of the films. Scanning electron microscope was employed to analysed the surface morphology of the films. Chemical binding configuration of the films was studied with Fourier transform infrared spectrophotometer in the wavenumber range 400 – 1500 cm<sup>-1</sup>. Optical transmittance of the films was recorded using Perkin-Elmer double beam spectrometer in the wavelength range 300 – 1500 nm in order to determine the optical band gap and refractive index.

## III. RESULTS AND DISCUSSION

### A. Deposition rate:

The deposition rate of the films was determined from the thickness and duration of the deposition. Deposition rate of the films formed under unbiased condition was 8.2 nm/min. It increased to 9.7 nm/min with increase of substrate bias voltage from 0 to -150 V as shown in the figure 1. The thickness of the films investigated was in the range 0.98 - 1.16  $\mu$ m. The increase of thickness increase in the substrate bias was due to the negative bias attracts the positively charged sputtered species and clusters in the plasma.

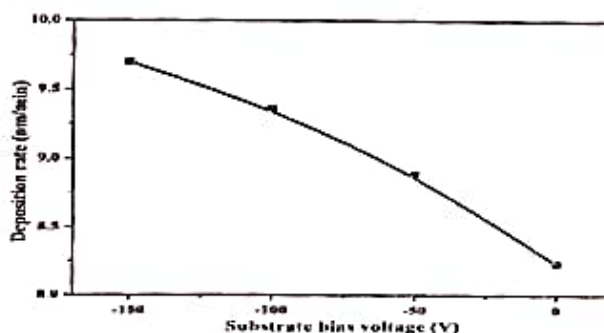
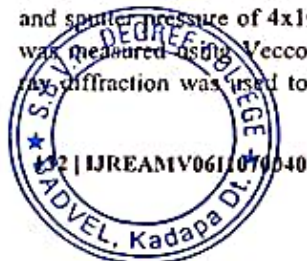


Fig. 1. Variation of deposition rate with substrate bias voltage of MoO<sub>3</sub> films.

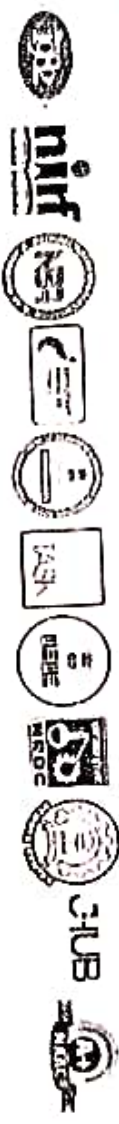




UGC AUTONOMOUS

# St. MARTIN'S ENGINEERING COLLEGE

A NON MINORITY COLLEGE AFFILIATED TO JNTUH APPROVED BY AICTE ACCREDITED BY NEA & NAAC A+  
ISO 9001:2008 CERTIFIED SIRO RECOGNITION BY MINISTRY OF SCIENCE & TECHNOLOGY GOVT OF INDIA  
DHULAPALLY, NEAR KOMPALLY SECUNDERABAD - 500 100 TELANGANA STATE INDIA WWW.SMECC.AC.IN



## H- Certificate of Participation

This certificate is awarded to

**DR.M.DORASWAMY NAIK**

For the Paper ID ICRAITMS\_202012\_182 of Title

“A Study On Marketing Opportunities In Corporate Hospitals”

Has participated in the Online International Conference on

“Recent Advances & Innovations in Technology, Management & Applied Sciences”

(ICRAITMS-2021)

Organized by Department of Mechanical Engineering, Civil Engineering, Humanities & Sciences and MBA of

St. Martin's Engineering College, Dhulapally, Secunderabad, T.S, India

on 19<sup>th</sup> & 20<sup>th</sup> March 2021

*[Signature]*

Patron & Program Chair  
Dr. P. Santosh Kumar Patra  
Principal

*[Signature]*  
Convener  
Dr D. V. Sreekanth  
HOD of Mechanical



*[Signature]*  
PRINCIPAL  
S.B.V.R. DEGREE COLLEGE  
BADVEL-516 227, Kadapa Dist.

