INFOTEK
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Optical Coatings from Design through Manufacture Invitation

Dear customers,

The Optical Coatings from Design through Manufacture training course is jointly sponsored by Infotek and The Thin Film Center from 10 to 14 in May.Please see details as below:

10-14 MAY 2010

3rd Floor in Hua Ting Guest House,2525 Zhongshan Road(W),Xuhui District.

Angus Macleod

Course Introduction：A course must be flexible so that it can accommodate the needs of the students. Therefore this is an interactive course. Any syllabus is purely provisional and will almost certainly be modified as the course proceeds and the responses and requirements of the students become clear.

The course covers the design of coatings and also techniques for understanding the design performance, preparation for manufacturing, reverse engineering of coatings that give problems in manufacture, material properties and their measurement, performance of coatings in systems and allied topics. Nowadays all this requires the use of computers with suitable software. This course makes use of the Essential Macleod software but it is not necessary to possess this software to profit from the course. The principles apply to any well-written software package. People who attend the course can take these principles and apply them to their own software even if it is not the Essential Macleod.

A major feature of the Essential Macleod software is that it is very easy to use, so that very little time is involved in learning to use it. The students will spend most of their time actually designing coatings. The emphasis of the course is on understanding. People who understand what they are doing will do it much better.

An important feature of the course is that students have the right to ask questions later. Often questions arise after a course is over. The instructors will always be ready, willing and happy to receive questions from the course students that they will do their best to answer. E-mail addresses for this purpose will be issued to students at the end of the course.

Instructor：H. Angus Macleod

Professor Emeritus of Optical Sciences

Education：

DTech, Council for National Academic Awards, 1979

Graduate Apprenticeship Sperry Gyroscope Company, 1954-1956

BSc, Glasgow University, 1954

Employment：

The University of Arizona: Professor Emeritus, 1995-date; Professor, Optical Sciences, 1979-1995

Thin Film Center Inc., President 1992-date

University of Aix-Marseille: Visiting Professor, 1979-1976

Newcastle Upon Tyne Polytechnic: Reader in Thin-Film Physics, 1971-1979

Sir Howard Grubb Parsons & Company: Technical Manager, 1969-1971; Instrument Development Manager, 1968-1969; Thin Films Manager, 1963-1968

Mervyn Instruments Ltd.: Senior Physicist, 1962-1963

Williamson Manufacturing Co.: Chief Development Engineer, 1960-1962

Sperry Gyroscope Company: Research Engineer, 1956-1960

Awards and Honors：

Society of Vacuum Coaters – Nathaniel H Sugerman Award, 2002

Association of Industrial Metallizers Coaters and Laminators – John Matteucci Award, 2000

University of Aix-Marseille – Docteur Honoris Causa, 1997

Optical Society of America – Esther Hoffman Beller Medal, 1997

Society of Photo-Optical Instrumentation Engineers – Gold Medal, 1987

Research：

Optical thin film component and systems design and calculation techniques

Provisional Syllabis：

Monday

Fundamentals

Definitions, sign conventions, polarization, oblique incidence.

Calculation methods, quarterwave rule, Materials

Introduction to the software

Structure of the software

Design tutorial, some standard designs.

Materials, performance calculations, color, both sides of the substrate.

Archives, tables, plots, editing and combining, importing and exporting data.

Tuesday – Friday

We list the topics separately but they are all interrelated. For example, we cannot design coatings effectively if we do not understand material properties, and so although the list shows designing coatings first and understanding materials second, some aspects of these topics must be taught together. How much time we spend on each topic will depend very much on the needs and interests of those taking the class.

How to design and evaluate coatings

Introduction to refinement and synthesis

Ultraviolet, Visible and Infrared – different regions, different problems.

Antireflection coatings:

V-coat

Half-wave flatteners
The basic 4-layer
Wide-band antireflection coatings

- Performance limits
- Equivalent layers
- The new ARHard from Fraunhofer
- Other antireflection coatings

Reflecting coatings: front-surface mirrors, quarterwave stacks, extended zone reflectors

- Metal-based coatings:
- Front surface protected aluminum
- Enhanced aluminum for luminous applications
- Problems in the infrared

Edge filters

- Long and short-wave pass filters.
- The problem of ripple and how to solve it
- Blocking unwanted sidebands

Bandpass all-dielectric filters

- Broadband versus narrowband filters
- Bandpass based on edge filters
- Single cavity filters and their limitations
- Multiple-cavity designs
- The ripple problem
- The sideband problem

Metal-dielectric filters

- Maximizing the transmittance of a metal layer and induced transmission filters
- Designing an induced transmission filter
- Using the induced transmission filter to block all-dielectric filter sidebands

Beam splitters

- Simple metal-dielectric
- Plate and cube beam splitters
- Problems of polarization
- Polarizing beam splitters
- Limitations of polarizing beam splitters
- Nonpolarizing beam splitters

Dichroic beam splitters

- Color separation coatings

Retarders and phase correctors

- Below or above critical angle?
- The roof prism and its problems.

Color in optical coatings

- How good is my coating?

Understanding Materials

What is a material and what is a substrate?

Using material databases

Importing and exporting material information.

Extraction (measurement) of n and k

Reverse Engineering

Pitfalls in reverse engineering. Details to watch.

Using the Reverse Engineer tool

Understanding coatings and their performance

Admittance diagram
Electric field distribution
Performance envelopes

Topics in manufacture

Run sheets
Manufacturing tolerances and how to estimate them
Manufacturing processes
Layer microstructure and other related properties

Advanced topics

How to use Scripts and Operations
Writing an operation and writing a script
How to assemble, analyze and design a system in vStack
Temperature sensitivity, cone and bandwidth calculations
Configuring the software, systems of units and how to change them, menu bars and icons.
How to generate reports
Report templates, how to use them and how to create them.

Each day

Tutorials

In tutorials the students apply the lessons learned while instructors give individual instruction and help with any problems.

Q&A（Questions and answers）

Attendees are given the opportunity to introduce supplementary topics or ask for some revision, or some similar activity.

Course Fees：

1.For China Commercial customers：10,000RMB/person（Including HK, Macao, Taiwan. Only for industrial area）

2.For China Educational customers： 6,800RMB/person（Including HK, Macao, Taiwan）

3.For Foreigners：1,800USD /person

※The fare is included lunch and refreshment

※Participate should bring computers themselves, Infotek will provide software

Preferential Policy

※More than 5 people can have a 30% off discount.

※The above offer cannot be used in conjunction with other promotional offers.Infotek holds the final explanation right of this general condition.

Hotel recommended:

1. **南华亭酒店 Hua Ting Guest Hotel**

电话：021-64391818 地址：上海市徐汇区中山西路2525号

标间/大床房门市价：728元/晚，讯技协议价：498元/晚（免服务费、送自助早餐、免费ADSL）

商务大床房：828元/晚，讯技协议价：598元/晚（免服务费、送自助早餐、免费ADSL）

Contact Info:

Tel:021-64391818

Address:2525 Zhongshan Road(W),Xuhui District.

Standard rooms、big bed room market price: 728 RMB/night, Local Negotiated Rate for Infotek :498 RMB/night

(Including buffet breakfast、ADSL for free and free service charge)

Business Room RMB828,Local Negotiated Rate for Infotek :598 RMB/night

(include service charge with buffet breakfast and free ADSL)

2. **上服大地假日宾馆（徐汇店）**

电话：021-54250088 地址：上海市徐汇区文定路205号（靠近裕德路）

标间/商务大床房门市价：388元/晚，讯技协议价：260元/晚（送早餐、免费ADSL）

Shangfu Dadi Holiday Hotel

Contact Info:

Tel: 021-54250088

Add: 205 Wending Road,Xuhui District, near Yude Road.

Standard /Business Room market price：388 RMB/night

Local Negotiated Rate for Infotek :260 RMB/night (with free breakfast and ADSL)

3. **纽宾凯国际酒店**

电话：021-61611818 地址：上海市徐汇区文定路219号（靠近凯旋路）

商务单间门市价：728元+15%服务费，讯技协议价：418元/晚（免费酒店班车送机服务、免费ADSL）

商务大床门市价：728元++15%服务费，讯技协议价：458元/晚（送单早、免费酒店班车送机、免费ADSL）

商务双床门市价：728元++15%服务费，讯技协议价：438元/晚（送双早、免费酒店班车送机、免费ADSL）

Shanghai New Beacon Qingzhilv International Hotel

Contact Info:

Tel: 021-61611818

Add: 219 Wending Road,Xuhui District, near Kaixuan Road.

Business Room (single room): 728RMB+15% service charge , Local Negotiated Rate for Infotek: 418 RMB/night (free hotel shuttle service to the airport and free ADSL)

Business Room (big bed): 728RMB+15% service charge , Local Negotiated Rate for Infotek: 458 RMB/night (with one free breakfast and free hotel shuttle service to the airport and free ADSL)

Business Room (double beds): 728RMB+15% service charge , Local Negotiated Rate for Infotek: 438 RMB/night (with two free breakfast and free hotel shuttle service to the airport and free ADSL)

4. 如家快捷酒店（体育馆店）

电话：54257900 地址：上海徐汇区蒲汇塘路51号

标间/商务大床门市价：439元/晚，讯技协议价：八五折

大床房门市价：389元/晚，讯技协议价：八五折

单人房门市价：329元/晚，讯技协议价：八五折

Home Inns- Shanghai Stadium Inn

Contact info:

Tel: 54257900

Add: 51,Puhuitang Road,Xuhui District

Standard room/ one bed business rooms market price: 439 RMB/night, Local Negotiated Rate for Infotek :15% discount off.

Big bed market price: 389RMB/night, Local Negotiated Rate for Infotek :15% discount off.

Single bed market price: 329RMB/night, Local Negotiated Rate for Infotek :15% discount off.

Note:

The attendees have to pay the accommodation themselves,and Infotek assist with the preparation

InfoTek Information Science & Technology Co,.Inc.

Room 201, No. 5, Lane 428, Qinzhou Road ,XuHui District, Shanghai

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course name			
Company Name		Lesson date	
Name		Title (Dept.)	
Address		Telephone	
E-MAIL		Fax	
Invoice Title			
Information source	☐newspaper's ad（_____）☐brochures☐introductions of relatives and friends ☐company's promotion☐consult with Infotek actively ☐Network（http:// _____）☐_____ Others		
RMB: _____			

✶Registration method:
1.Please send the form to us by fax or E-mail
2..Notes: Please submit the completed form to complete the application.
✶Payment:
RMB Account:

户　　名：讯技光电科技(上海)有限公司
InfoTek Information Science & Technology Co,.Inc.
银行名称：中国工商银行上海市习勤路支行
Bank：Industrial and Commercial Bank of China，Xi Qin Road Branch，Shanghai
银行帐号：1001-2281-0901-6237-775
Bank Account Number：1001-2281-0901-6237-775

Please indicate the course name、data and participants' info in the receipt after make payment,you may send the receipt to us by fax 021-54971081 or mail to course@infotek.com.cn.

We will notify the participants by fax or email a week before the course. Not received the notice, please contact with Infotek staff.