

## Global Initiative of Academic Network

Course Title: Air Quality Measurements

Broad Area: Earth & Environment Sciences (Air Quality)

### Overview :

Air pollution is an emerging serious issue in India. This course will introduce the students to the different measurements and analysis techniques for key pollutants of concern including the organics and particulate matter. The course will also have hands-on lab sessions to provide the students exposure to measurements and analytical work.

### Objectives:

The objectives of this course are to:

- Educate on the different measurement techniques for pollutants of interest
- Provide hands-on experience on some of the measurement and analytical techniques for measuring air quality pollutants.

### Course details: Air Quality Measurements

21/11/2016 Monday

*Lecture 1:* 9.30 AM to 11.00AM

Overview of Air Quality Measurements, Introduction and Course Objectives

*Lecture 2:* 11.45 AM to 1.15AN

Impact of air quality on Human, Health

Types of air quality measurements

Tutorial 1: 2.00PM to 4.00PM

Introduction to Air Quality Monitoring Network Design

22/11/2016 Tuesday

*Lecture 3:* 9.30 AM to 11.00AM

Introduction to VOCs and properties, Types of measurement techniques

- Continuous monitors
- Cartridges
- Canisters
- Passive samplers

*Lecture 4:* 11.45 AM to 1.15AN

Measurement of key VOCs

Tutorial 2: 2.00PM to 4.00PM

Measurement of aldehydes and ketones

23/11/2016 Wednesday

*Lecture 5:* 9.30 AM to 11.00AM

Introduction to PM and its properties, Types of PM measurements

- Continuous
- Filter-based
- Personal exposure

*Lecture 6:* 11.45 AM to 1.15AN

Method approaches

Chemical speciation of filters

Tutorial 3: 2.00PM to 4.00PM

Quiz

24/11/2016 Thursday

*Lecture 7:* 9.30 AM to 11.00AM

Need for Chemical speciation, Analytical Techniques for filter-based samples, Advanced methods for chemical speciation

*Lecture 8:* 11.45 AM to 1.15AN

Criteria Gas Measurements – techniques and measurement principle

Tutorial 4: 2.00PM to 4.00PM

Passive Gas Measurements

25/11/2016 Friday

*Lecture 9:* 9.30 AM to 11.00AM

Hands-on experience with VOC analysis

*Lecture 10:* 11.45 AM to 1.15AN

Hands-on experience with PM chemical speciation

Tutorial 5: 2.00PM to 4.00PM

Final Review and Discussion

### **Prerequisites:**

Basic knowledge of atmospheric chemistry

Basic knowledge of chemical analytical techniques and lab safety

### **Teaching Faculty**

**Dr. R.K.M. Jayanty** has more than 48 years of experience in the field of environmental analytical chemistry. Dr. Jayanty has been instrumental in coordination of several methods development and laboratory analyses of organic species in multimedia (air, water, and industrial environments); audit material development, instrument evaluation and testing; and QA/QC. From 1999 to 2015, he was the Program Manager for the EPA chemical speciation of PM<sub>2.5</sub> filter samples collected in the nationwide network operations. Dr. Jayanty is currently working on international air quality monitoring programs. Dr. Jayanty's technical expertise includes methods development, evaluation, and field validation studies related to measuring toxic and related air pollutants in ambient air and stationary sources. As a leading expert in the field of air quality monitoring and analyses, he has been invited as a keynote speaker at several Asia-region conferences (including India, Thailand, China, Taiwan, South Korea and Japan). Dr. Jayanty has provided training on PM<sub>2.5</sub> chemical speciation to the staff at the Indian Central Pollution Control Board (CPCB), to initiate the pilot PM<sub>2.5</sub> speciation network at six cities in India. He has participated in several international air quality studies in India, Saudi Arabia, Ghana and Tanzania. Dr. Jayanty is an internationally recognized scientist and has been the recipient of several prestigious awards and honors including those from the American Chemical Society (ACS) and the Air & Waste Management Association (A&WMA). He is a Fellow of the ACS, A&WMA and other professional associations. He has served as expert panel member for several review boards. He is a member of the *Editorial Review Board* of the Journal of A&WMA. He has published more than 150 technical papers, reports, and presentations.

Name of Faculty: Dr. RKM Jayanty

Affiliation: RTI International

Address: 3040 E. Cornwallis Rd, reserch triangle park NC 27709, USA.

Contact No: 1. 001-919-541-6483 (Dr. RKM Jayanty),

Email: rkmj@rti.org

### **Who can attend:**

- Executives, engineers and researchers from manufacturing, service and government organizations including NGOs and R&D laboratories.

- Student students at all levels (BTech/MSc/MTech/PhD) or Faculty from reputed academic institutions and technical institutions.

### Registration Fees

<b>Participants from abroad</b>	: US \$500
<b>Industry/ Research Organizations</b>	: Rs. 10000/-
<b>Academic Institutions</b>	:Rs. 5000/-
<b>Current Students</b>	:Rs. 1000/-
<b>Current Students belonging to SC/ST community</b>	:Rs. 500/-

The above fee includes all instructional materials, computer use for tutorials, 24 hr free internet facility and lunch. The participants will be provided with shared accommodation on payment basis.

*There will be a concession of 50% of the fee for the faculty working in the constituent and affiliated colleges of JNTUH.*

### Host Faculty

#### **Dr. VURIMINDI. HIMABINDU**

Associate Professor in Environment  
Institute of Science and Technology  
JNT University Hyderabad  
Kukatpally, Hyderabad-500085  
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**Dr. V. Himabindu:** working as Associate Professor, Centre for Environment, and Co-ordinator, Centre for Alternative Energy Options, CEN, IST, JNTU Hyderabad, India. She earned PhD in Chemistry from JNTU Hyderabad. Dr. V. Himabindu research focuses on monitoring of Air, Water and Soil pollutants and their control technologies, Bio fuels production, Energy materials, Sequestration of CO<sub>2</sub> gases from industrial air emissions and Hydrogen energy. She was as Co-coordinator for pollution control board sponsored project titled "Online air quality measurement in Hyderabad city", and principle investigator for Baba Atomic Research Centre sponsored project titled "Base line air quality measurement at proposed mining area".

### Number of Publications:

S. No	Status of Journal	No. of papers
1	International Journals	50
2	National Journals	9
3	International Conferences	65
4	National Conferences	13

Teaching experience : **17 years**

No of R & D projects received from state and central Govt. Organizations: **12**

(BARC, APPCB, CPCB, DRDO, DST, UGC, SEDA- Sweden, MNRE, DBT)

### Membership in professional:

<b>1</b>	Life member of The Indian Society for Technical Education.
<b>2</b>	Member of American Society of Civil engineers.
<b>3</b>	Central Pollution Control Board Approved Government analyst from Jan 2002.

**Areas of Interest:**

Pollution monitoring and control technologies

Air quality measurement and Air quality baseline data generation

Waste material recovery and reuse

Remediation of contaminated lakes

Biofuels

Carbon nano materials

Energy materials

Hydrogen production and storage