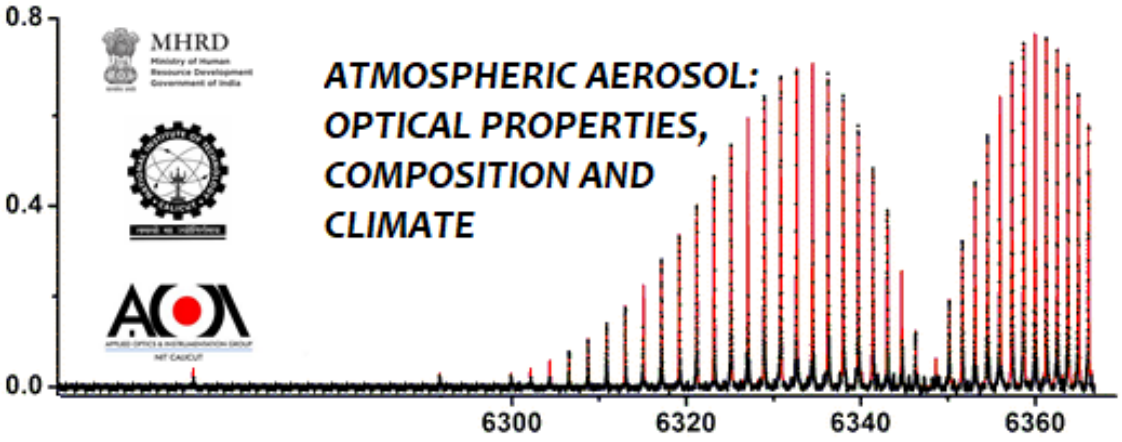

GIAN

GLOBAL INITIATIVE OF ACADEMIC NETWORKS

GIAN COURSE ON
ATMOSPHERIC AEROSOL: OPTICAL PROPERTIES, COMPOSITION AND CLIMATE
July 23 – 28, 2018

INTERNATIONAL FACULTY

Dr. Claudio Mazzoleni is an Associate Professor in Physics of Michigan Technological University (MTU), Houghton, MI, USA. His research specializations are Atmospheric Science, Aerosol properties (optical, physical and morphological) and effects on clouds and climate and Instrument development and environmental optics.

OTHER FACULTIES

Dr. Lynn R. Mazzoleni is an Associate Professor in Chemistry of Michigan Technological University (MTU), USA. Her primary research interests are to identify organic aerosol constituents from a variety of atmospheric environments. Her group has participated in a number of ambient and laboratory aerosol studies and is complying a large database of molecular observations.

Dr. M.K.Ravi Varma is an Associate Professor in Physics of National Institute of Technology – Calicut (NITC), INDIA. His research areas includes Spectroscopy, Development of Instrumentation for Atmospheric and Environmental monitoring using principles of Optics, Radiative transfer and aerosol forcing on Climate (Global and Regional).

COURSE OVERVIEW

Atmospheric aerosol(also known as particulate matter) are minute solid or liquid particles or both, suspended in air, with diameters between about 0.002 µm to about 100 µm. They vary greatly in size, source, chemical composition, amount and distribution in space and time, and how long they survive in the atmosphere. Primary aerosol are particles that are emitted directly into the atmosphere (for instance, sea-salt, mineral aerosols (or dust), volcanic dust, smoke and soot, some organics). Secondary aerosols are particles that are formed in the atmosphere by gas-to-particles conversion processes (for instance, sulfates, nitrates and some organics). Some types of aerosol present in the lower troposphere, for example from vehicle emissions in urban areas, pose a threat to human health.

When these particles are sufficiently large, we notice their presence as they scatter and absorb sunlight. Their scattering of sunlight can reduce visibility (haze) and redden sunrises and sunsets. Aerosol interact both directly and indirectly with the Earth's radiation budget and climate. As a direct effect, the aerosol scatter sunlight directly back into space; but some aerosol can also absorb the solar radiation, heating up the atmospheric layer where they are located. As an indirect effect, aerosol in the atmosphere can modify the size and concentration of cloud droplets and ice crystals, changing how the clouds reflect and absorb sunlight. Aerosol also can act as sites for chemical reactions (heterogeneous chemistry). The most significant of these reactions are those that lead to the destruction of stratospheric ozone. During winter in the Polar Regions, aerosol grow to form polar stratospheric clouds. The large surface areas of these cloud particles provide sites for chemical reactions to take place. These reactions lead to the formation of large amounts of reactive chlorine and, ultimately, to the destruction of ozone in the stratosphere.

This course will provide an overview of atmospheric aerosol, their classification and their distribution in the atmosphere, their chemical composition, optical properties, detection methods, measurement and characterization, and their impact on radiative transfer and climate.

COURSE OBJECTIVES

The primary objectives of the course are as follows:

i) familiarize participants to the presence of suspended particles in the atmosphere and their influence on human health and climate,

ii) familiarize participants with the sources and sinks of atmospheric aerosol, their composition and their global distribution and transport,

iii) introduce the students to the optical properties of atmospheric aerosol, their effect on radiative transfer and their impact on global warming/cooling,

iv) provide an exposure to various methods and instrumentation to characterize atmospherically relevant aerosol,

v) reinforce the theoretical knowledge acquired in the points above, through practical problems and their solutions, and through hands on experiences with some spectroscopic instruments used to characterize the aerosol optical properties.

WHO CAN ATTEND?

(i) Scientists, engineers and researchers from academic, industrial and governmental organizations, including R&D laboratories.

(ii) Students at all levels (BTech/MSc/MTech/PhD) or Faculty from reputed academic institutions and technical institutions.

REGISTRATION FEES

The registration fee for the course is as follows:
Faculty members from Academic Institutions: ₹. 3000.00
Students from Academic Institution: ₹. 1000.00
Industry/Research Organization: ₹. 5000.00
Participants from abroad: USD. 200.00

The above fee includes the cost of instructional materials, computer use for tutorials, refreshments and working lunch. A GST amount of 18% is applicable to the registration fee. Students and faculties of NITC are exempted from paying GST. In addition to the above fee, one-time online fee of ₹. 500.00 is to be paid for registration in the GIAN web portal (See the registration process outlined below). Accommodation for outstation participants will be charged separately. No TA/DA will be paid for any participant.

REGISTRATION PROCESS

Step 1: Web Portal Registration: Visit GIAN Website at the link - http://www.gian.iitkgp.ac.in/GREGN/index and create login, User ID, and Password. Fill up the GIAN registration form and do web registration by paying ₹. 500/- online, through Net Banking/ Debit/ Credit Card as per the instructions given there in. This provides the user with life time registration to enroll in any number of GIAN courses offered (Skip this step, if already registered with GIAN portal).

Step 2: Course Registration: Login to the GIAN portal again with the user ID and password already created in step 1. Click on course registration option at the top of registration form. Select the course titled "ATMOSPHERIC AEROSOL: OPTICAL PROPERTIES, COMPOSITION AND CLIMATE" from the list and click on the save option. Confirm your registration by clicking on the Confirm Course option. The participant may then proceed for the course registration with the course coordinator by filling out the registration form and paying the course registration fee. The course fee should be paid in the form of Draft/ NEFT/RTGS. The account details are given below. The duly filled up registration form and the DD/NEFT/RTGS receipt must be sent to the course coordinator. PDF copies of the above documents must be sent to **r.varma@nitc.ac.in**. The DD/Receipt of NEFT/RTGS and the original registration form (hard copy) must reach the coordinator on or before 20th June 2018. The maximum number of participants for the program would be limited to 30.

Account Name	: DIRECTOR NIT CALICUT (GIAN)
Account No. and Bank	: 35909407299 ; State Bank of India
Branch and Branch code	: CREC CHATHAMANGALAM ; 002207
IFSC	: SBIN0002207
MICR and SWIFT code	: 673002012 ; SBININBB392

IMPORTANT DATES

Last date for receiving applications	: 20th June 2018
Last date for intimation to participants by email	: 1st July 2018
Course dates	: 23 – 28 July 2018

ABOUT GIAN COURSE

MHRD, Govt. of India has launched an innovative program titled "Global Initiative of Academic Networks (GIAN)" in higher education, in order to garner the best international experience. As part of this, internationally renowned academicians and scientists are invited to augment the country's academic resources, accelerate the pace of quality reforms and elevate India's scientific and technological capacity to global excellence.

ABOUT NIT CALICUT

National Institute of Technology Calicut (NITC) is a Technical Institution of national importance, initially started as Regional Engineering College (REC) way back in 1962. National Institute of Technology Calicut (NITC) has made a mark as a vibrant entity with proven successes over a broad spectrum. Its talent pool in education and research is well recognized. Technical education in NITC encompasses undergraduate and graduate students along with doctoral scholars, and a wider participation through outreach. It has a core of highly motivated faculty members and committed staff members. The Institute emphasizes the primacy of academic excellence to provide a supply of well-trained engineers and scientists ready to make a positive impact on industry, driving global, national, and regional economic growth. NIT-C offers 10 Undergraduate and 30 Postgraduate programs at present. Besides this, all departments have their research programs as well.

APPLIED OPTICS AND INSTRUMENTATION RESEARCH GROUP

The Applied Optics and Instrumentation laboratory is one of the laboratories in the Department of Physics, NITC, where spectroscopic instrumentation and analysis algorithms are developed for optical sensing of air pollution. The primary goal of this group is the design and development of instruments for optical spectroscopy targeting the monitoring of atmospheric trace gases and airborne particulate matters. The instruments developed in the laboratory incorporate techniques based on Cavity Enhanced Absorption Spectroscopy and Integrating Sphere Nephelometry. Applications of the instrumentation include in-situ monitoring of trace gaseous species, and aerosol optical depth in polluted environment. Noted field campaign participation is during the CAREBEIJING-NCP 2014 studies at the Wangdu supersite, southwest of Beijing, China.

ADDRESS FOR CORRESPONDENCE

Dr. M.K.Ravi Varma
Associate Professor
Department of Physics
National Institute of Technology Calicut
Calicut – 673601, Kerala
Phone: +91 9544106752
Email : r.varma@nitc.ac.in