2019 ICG – 1st North American Summer School on Photonic Materials

(Application Form)

1 – Identification of the Candidate

(Name as written in the passport)

First Name

Last Name

Address

City

State/Province

ZIP / Postal

Country

Phone number

E-mail

Citizenship

Homepage or URL (if applicable)

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2 – Academic Information

A) Current program of study

Discipline

Program

Institution/University

Starting date of your training in this program (mm/yyyy)

B) Information about your current research project

Project title

Research supervisor

First Name

Last Name

Affiliation

Phone

E-mail

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Summarize your current research project (2 500 characters, including spaces).

3 – Motivations

Please, tell us about your interest in this special Summer School. What are your expectations (2 500 characters, including spaces)?

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4 – Project Selection

The list of the experimental projects is given below. You will be involved in only one project for the duration of the school. Please indicate your top three choices from the list by order of preference.

1	***Integrated optical devices*** Students will characterize silicon-on-insulator waveguides and various building blocks of silicon photonic integrated circuits such as power splitters, directional couplers, micro-ring resonators, Mach-Zehnder interferometers and Bragg gratings. They will learn how to measure and analyze spectral responses of both amplitude and phase of those optical components using an automated setup and they will have a chance to test their own designs.
2	***Heavy oxide glass preparation*** Preparation of heavy metal oxide optical glasses needs particular attention at every step of the production process to achieve homogeneous glass melts (selection of precursors and crucible, atmosphere and temperature profile) and to obtain glass bulks of optical quality (absence of bubbles and striae). Infrared-transmitting glasses will be prepared using appropriate procedures and then characterized using several techniques (thermal, optical and structural properties).
3	***Production of glass ceramics*** Transparent glass-ceramics based on oxyfluoride will be produced by proper physical treatment of parent glasses. Structural and optical characterization techniques will be employed to obtain specific optical features of glass-ceramics (and to compare them to those of the parent glasses).
4	***Propagation and losses in optical fiber*** The propagation characteristics of both an erbium-doped and an undoped silica fiber will be characterized. Such fibers will be used to implement a watt-level erbium-doped silica fiber laser.
5	***Writing Bragg gratings in glass*** Fiber Bragg gratings (FBG) will be written in an undoped silica fiber with a femtosecond laser source using the phase-mask technique. These FBGs will be used to implement a watt-level erbium-doped silica fiber laser.
6	***Er^{3+}: silica fiber laser assembly*** Low-loss splicing recipes will be developed between undoped and erbium-doped fibers. A watt-level erbium-doped silica fiber laser assembly will be realized and the laser performances will be evaluated.
7	***Optical sensors based on photo-inscribed glass waveguides*** In the first part of the experiment, optical waveguides will be photoinscribed in a glass block with femtosecond pulses and subsequently optically characterized. In the second part, surface skimming photoinscribed waveguides will be employed as refractive index sensors.

8	***Spectroscopy of rare-earth doped glass*** The development of active photonic materials based on rare-earth ions for lasers and optical amplifiers requires a thorough understanding of their spectroscopic properties. Time-resolved emission spectroscopy experiments will be conducted on a variety of rare-earth ion doped glasses in order to select the best candidates meeting predefined requirements (emission wavelength range, pumping scheme, lifetime, etc.).
9	***Liquid crystal devices*** Electro-optic effects in liquid crystals will be investigated. Refractive index changes versus the electric voltage applied to the liquid crystal cell in stationary and dynamic modes will be analyzed. The observed phenomena will then be used to determine the electro-optic coefficient of the studied material based on theoretical models.
10	***Thin films based on chalcogenide by co-evaporation*** During this experiment, students will prepare thin film chalcogenide glasses deposited on glass substrates using a a co-evaporation technique. Different methods will be performed for the characterization of the optical quality of the films.

Select Choice 1 Select Choice 2 Select Choice 3

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5 – Send your application

Will you participate in the ICG conference in Boston on June 9-14, 2019?

☐ I confirm that the information provided in my application is complete and accurate and that I have read and understood the eligibility conditions and detailed program.

Please send the following documents

- ✓ Application Form
- ✓ Resume
- ✓ Letter of Reference from your Research Supervisor

at this email address : nasspm@copl.ulaval.ca

For additional information

nasspm@copl.ulaval.ca