

Post-doctoral position

Fabrication of RF-MEMS switches prototypes

Partners:	3IT –	Université de Sherbrooke	www.3it.ca
	CIRFE –	University of Waterloo	www.cirfe.uwaterloo.ca
	C2MI –	MiQro Innovation Collaborative Center	www.c2mi.ca

Context: In the context of collaboration with industrial partners, we are seeking 1 post-doctoral fellow for the development, microfabrication and experimental characterisation of robust RF-MEMS switches in industrial type cleanroom facilities. Despite demonstrations of promising RF-MEMS switches, commercial products commonly have problems at high frequencies and exhibit lower performance than expected. In addition, packaging affects the switch performance and should be done at the wafer-level for cost and reliability reasons. Through this collaborative effort, we will work together to address the challenges in design, microfabrication, packaging and reliability of high frequency RF-MEMS switches to meet the needs for production and commercialisation of these components.

Project description: Radio-frequency and micro-wave systems require increased flexibility to allow agile operation over a range of frequencies, according to the system's position, or its reprogrammability. RF-MEMS switches are promising components for such systems. The switch allows or not an electrical contact and can be integrated in multiple circuits such as phasors, programmable filter or switch matrices. With increasing frequency ranges, two important challenges remain difficult to overcome: (i) operation up to 20 GHz with minimal signal degradation and (ii) reliability. The Université de Sherbrooke and University of Waterloo, in collaboration with their industrial partner, propose to resolve these challenges by developing reliable RF-MEMS switches prototypes for high frequency operation, wafer-level packaging and fabricated on a 200 mm industrial grade MEMS line. Such components, forming an active research field worldwide, require multidisciplinary skills, in the fields of RF engineering, electro-mechanical engineering, material science, microfabrication, and packaging. This project brings a multidisciplinary team together to design the novel RF MEMS device and develop a microfabrication process that is compatible and leverages our industrial partner manufacturing capabilities while integrating aspects of packaging and reliability from the start. The processing will be done in the state-of-the-art 200 mm cleanroom facilities of the MiQro Innovation Collaborative Center (C2MI).

Candidate: The candidate should have demonstrated autonomy, adaptability, the ability for team work, and excellent soft skills. Good knowledge of materials and processes used in cleanroom microfabrication as well as cleanroom experience are required. Knowledge in RF circuits and components, MEMS design, and their underpinnings are desirable assets. The candidate should have good language skills in English and ideally also speaks French.

To submit your application, please send your detailed CV + letter of motivation + letters of recommendation by email to the addresses below.

Start date: immediately, according to availability.

Contact:

Serge Ecoffey, electrical engineering, 3IT-UdeS, Serge.Ecoffey@usherbrooke.ca;