

# THÔNG BÁO

V/v: Trình bày Seminar Khoa học

Vào lúc 15g-17:30g, thứ Tư ngày 15/11, tại phòng 306B1, các Giáo Sư đến từ Trường ĐH KAUST, Saudi Arabia sẽ có buổi seminar về lĩnh vực thông tin vô tuyến 5G và thiết bị cảm biến vô tuyến. Thông tin tóm tắt về chủ đề seminar và tiểu sử các giáo sư như bên dưới.

Trân trọng kính mời quý Thầy Cô và các bạn sinh viên, học viên cao học đến tham dự.

## **Talk 1: Paving the Way Towards 5G Wireless Communication Networks**

**Người trình bày:** Prof. Mohamed-Slim Alouini

## **Talk 2: Flexible, Wearable and Disposable Wireless Sensing Systems Through Additive Manufacturing**

**Người trình bày:** Prof. Atif Shamim

### **Talk 1: Paving the Way Towards 5G Wireless Communication Networks**

**Abstract 1:** 5G wireless communication networks are expected to fulfill the demand for higher data rates, lower latency, and/or massive connectivity of a growing number of users/devices exploiting a variety of wireless applications. This envisioned rapid increase in the use of wireless services lead the wireless research community to start looking at new technologies to address problems related to the radio-frequency (RF) spectrum exhaustion. This includes the development of (i) new techniques and concepts such as massive multiple input multiple output (MIMO) systems and heterogeneous networks to improve the spectral efficiency at the link and network layers, respectively, and (ii) novel schemes to better utilize the unregulated bandwidth in particular in the upper millimeter wave, THz, and optical portion of the spectrum. This talk will first go briefly over the vision and goals of 5G wireless communication networks. Then it presents some of these emerging enabling technologies that need to be developed to pave the way towards the successful roll-out and operation of these future wireless networks.

**Bio:** Mohamed-Slim Alouini (S'94, M'98, SM'03, F'09) was born in Tunis, Tunisia. He received the Ph.D. degree in Electrical Engineering from the California Institute of Technology (Caltech), Pasadena, CA, USA, in 1998. He served as a faculty member in the University of Minnesota, Minneapolis, MN, USA, then in the Texas A&M University at Qatar, Education City, Doha, Qatar before joining King Abdullah University of Science and Technology (KAUST), Thuwal, Makkah Province, Saudi Arabia as a Professor of Electrical Engineering in 2009.

Prof. Alouini is a Fellow of the Institute of Electrical and Electronics Engineers (IEEE), a member of the Thomson ISI Web of Knowledge list of Highly Cited Researchers and of the Elsevier/Shanghai Ranking list of Most Cited Researchers, and an IEEE Distinguished Lecturer of the IEEE Communications Society. He is a recipient of the Recognition Award of the IEEE ComSoc Wireless Technical Committee in 2016 and a co-recipient of best paper awards in ten IEEE conferences

(including ICC, GLOBECOM, VTC, PIMRC, and DySPAN). His current research interests include the modeling, design, and performance analysis of wireless communication systems.

**Talk 2:** Flexible, Wearable and Disposable Wireless Sensing Systems Through Additive Manufacturing

**Abstract 2:** With the advent of wearable sensors and internet of things (IoT), there is a new focus on electronics which can be bent so that they can be worn or mounted on non-planar objects. Moreover, there is a requirement that these electronics become extremely low cost, to the extent that they become disposable. The flexible and low-cost aspects can be addressed by adapting additive manufacturing technologies such as inkjet, screen and 3D printing. This talk introduces additive manufacturing (with a special focus on inkjet printing) as an emerging new technique to realize low cost, flexible and wearable wireless sensing systems. The ability of inkjet printing to realize electronics on unconventional mediums such as plastics, papers, and textiles has opened up a plethora of new applications. In this talk, various innovative antenna and sensor designs will be shown which have been realized through inkjet or 3D printing methods. Many innovative inks and multilayer processes will be presented where dielectrics are also printed in addition to the metallic parts, thus demonstrating fully printed devices. In the end, many system level examples will be shown for applications such as health care or environmental monitoring through these wireless sensing nodes. The promising results of these designs indicate that the day when electronics can be printed like newspapers and magazines through roll-to-roll and reel-to-reel printing is not far away.

**Bio 2:** Atif Shamim – received his M.A.Sc. and Ph.D degrees in electrical engineering at Carleton University, Canada in 2004 and 2009 respectively. He was an NSERC Alexander Graham Bell Graduate scholar at Carleton University from 2007 till 2009 and an NSERC postdoctoral Fellow in 2009-2010 at Royal Military College Canada and KAUST. In August 2010, he joined the Electrical Engineering Program at KAUST, where he is currently an Associate Professor and principal investigator of IMPACT Lab. He was an invited researcher at the VTT Micro-modules Research Center (Oulu, Finland) in 2006. Dr. Shamim was the recipient of the best paper prize at the European Microwave Association Conference in 2008. He was given the Ottawa Centre of Research Innovation (OCRI) Researcher of the Year 2008 Award in Canada. His work on Wireless Dosimeter won the ITAC SMC Award at Canadian Microelectronics Corporation TEXPO in 2007. Prof. Shamim's students won the Best Paper Prize (3rd position) in IEEE IMS 2016 and (1st position) in IEEE MECAP 2016. Prof. Shamim also won numerous business-related awards, including the 1st prize in Canada's national business plan competition and was selected for OCRI Entrepreneur of the year award in 2010. He is an author/co-author of over 150 international publications and an inventor on 18 patents. His research interests are in innovative antenna designs and their integration strategies with circuits and sensors for flexible and wearable wireless sensing systems through a combination of CMOS and additive manufacturing technologies. Dr. Shamim is a Senior Member of IEEE and serves on the editorial board of IEEE Transactions on Antennas and Propagation.