2019 RRAM/MRAM Workshop Program

DAY 1: October 17th, 2019

8:15-8:45 Registration

8:45-9:00 Welcome (Attilio Belmonte, imec)

Session 1 (imec Auditorium): Selectors *Chairman: Christian Witt (Global Foundries)*			
9:00-9:30	Daniele Garbin	imec	*Ovonic Threshold Switch Selector: Pathways Towards Improved Endurance Performance*
9:30–10:00	Dirk Wouters	RWTH Aachen	*Cr-doped V_2O_3 as a versatile threshold switching device*

10:00-10:30 Coffee break

Session 2 (imec Auditorium): Fundamental Understanding of RRAM *Chairman: Yangyin Chen (Western Digital)*			
10:30-11:00	Stephan Menzel	FZ Juelich	*Multiscale Modeling of VCM-based and ECM-based ReRAMs*
11:00-11:30	Alexander L. Shluger	University College London	*Atomistic models of switching mechanisms in RRAM*
11:30-12:00	Susanne Hoffman-Eifert	FZ Juelich	*Enabling analog switching behavior in filamentary VCM-type ReRAM devices*

12:00 – 13:00 Lunch break

Session 3 (imec Tower 2A Event Room): MRAM physics – from conventional to exploratory *Chairwoman: Alice Mizrahi (CNRS, Thales)*			
13:00-13:30	Simon Van Beek	imec	*Impact of self-heating on reliability predictions in STT-MRAM*
13:30-14:00	Robert Carpenter	imec	*Enabling low-energy MRAM using double spin torque*

14:00 – 14:30 Coffee break

Session 4 (imec Tower 2A Event Room): Memories for Machine Learning *Chairman: Kevin Garello (imec)*			
14:30-15:00	Stefan Cosemans	imec	*Energy Efficient DNN Inference with Analog in-Memory Computing: from circuit architecture to device options and requirements.*
15:00-15:30	Daniele Ielmini	Politecnico di Milano	*RRAM for In-Memory Computing*
15:30-16:00	Alice Mizrahi	CNRS, Thales	*Stochastic nanomagnets for bio-inspired computing*

16:00 – 17:15 Panel Discussion (imec Tower 2A Event Room):

> Topic: Which memory technology is suitable for Machine Learning Applications?
> Moderator: Gouri Sankar Kar (imec)
> Panelists: Myung Hee Na (imec), Dirk Wouters (RWTH Aachen), John R. Jameson (Adesto Technologies), Yangyin Chen (Western Digital)

19:30 – 22:30 – Dinner at the Faculty Club ([Google Maps link](#))

DAY 2: October 18th, 2019

Session 5 (imec Auditorium): Device Physics			
Chairman: Sergiu Clima (imec)			
9:00-9:30	David Cooper	University of Grenoble	*In-situ electron microscopy of RRAM And MRAM devices*
9:30-10:00	Regina Dittmann	FZ Juelich	*Sub-filamentary networks and their dynamics as source of cycle-to-cycle variability in ReRAM devices*
10:00-10:30	Eric Pop	Stanford University	*Probing the Nanoscale Limits of Resistance Switching in Some Oxides*

10:30 – 11:00 Coffee break

Session 6 (imec Auditorium): Advancement in MRAM technologies			
Chairman: S N Piramanayagam (NTU Singapore)			
11:00-11:30	Kevin Garello	imec	*Spin-orbit torques MRAM for low power embedded memories: from fundamentals to technology integration pathways*
11:30-12:00	Alice Mizrahi	CNRS, Thales	*Swarm intelligence with memristors*

12:00 – 13:00 Lunch Break / Poster Session

13:00 – 13.30 Imec Cleanroom tour

Session 7 (imec Auditorium): Memories for Machine learning – part 2			
Chairman: Daniele Leonelli (Huawei)			
13:30-14:00	S N Piramanayagam	Nanyang Technological University, Singapore	*Domain-wall based devices for neuromorphic computing*
14:00-14:30	Peng Huang	Peking University	*Neuromorphic Computing Based on Binary OxRRAM Devices*

14:30 – 15:00 Coffee break / Poster Session

Session 8 (imec Auditorium): RRAM and beyond			
Chairman: Eric Lee (Macronix)			
15:00-15:30	Monica Burriel	University of Grenoble	*Interfacial Switching in perovskite-based nanoionic devices*
15:30-16:00	John R. Jameson	Adesto Technologies	*Te-based CBRAM as an enabler for low-power memory, security… and of course AI*
16:00-16:30	Umberto Celano	imec	*HfO_2 beyond RRAM, identifying ferroelectricity in doped hafnia*

16:30 - 16:45 Workshop Closure

16:45 – 18:00 – Poster Session