

Aboubacar Chaehoi, Ph.D.

Senior Technical Leader — MEMS & Semiconductor Sensor Specialist

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PROFESSIONAL SUMMARY

Senior Technical Leader and Ph.D. with 20+ years of comprehensive expertise in MEMS sensors, semiconductor design, and microsystem integration for automotive and high-reliability industrial applications. Track record leading cross-functional R&D teams from initial sensor concept and multiphysics modeling through cleanroom fabrication, component PPAP qualification, and high-volume mass production. Led advanced engineering in automotive inertial (accelerometers, gyroscopes), pressure and magnetic (Hall-effect) sensors, with international patents and multiple papers and oral presentations in major international IEEE conferences and journals.

CORE COMPETENCIES & TECHNICAL SKILLS

MEMS & Sensors:	Hall-Effect Magnetic Sensors, Accelerometers, Gyroscopes, Pressure Sensors
Processes & Packaging:	CMOS-SOI Integration, Monolithic Integration, Wafer-Level Packaging (BCB, Anodic Bonding)
Automotive & Quality:	AEC-Q100, PPAP, Component Qualification, Reliability Assessment, ISO 26262, Functional Safety and Automotive SPICE, Customer Interface
CAD, FEM & Simulation:	Synopsys, Cadence (Analog Artist, Virtuoso), ANSYS (Multiphysics, FEM), COMSOL, CoventorWare, MATLAB, Python
Management & R&D:	Technical Leadership, Project Management, European/National Grant Proposal Authoring, Patent Strategy

PROFESSIONAL EXPERIENCE

Technical Leader - Automotive Magnetic Sensors

Jan 2019 – Apr 2026

TDK-Micronas GmbH — Freiburg, Germany

- **Technical Project Ownership:** Led technical development of Hall-effect magnetic field sensor ICs and sensor system solutions for Tier-1 automotive and industrial electronic applications.
- **Product Lifecycle & Qualification:** Designed, executed, and reported comprehensive product characterization, evaluation, and support AEC-Q100 qualification plans from wafer level to finished package, approved of qualification data and production start.
- **Functional Safety:** Partnered with FuSa Manager to support FMEA and safety analysis.
- **Cross-Functional Leadership:** Directed multidisciplinary engineering tasks across IC design and test engineering teams.
- **Customer - R&D Interface:** Acted as primary technical authority and point of contact for automotive key account customers, translating OEM requirements into technical specifications.
- **Management Reporting:** Partnered with Product Manager to swiftly resolve technical roadblocks and maintain product quality and delivery time. Monthly reported to top management (CEO and VPs) on the technical issues which could impact timing, budget as well as product portfolio.

Senior Sensor Engineer - Project Leader

Jan 2015 – Dec 2018

ZF-TRW Automotive — Radolfzell, Germany

- **Specification and Requirements Management:** Authored MEMS sensor component specifications and qualification matrices (accelerometers, gyroscopes, pressure sensors) for active/passive safety systems.
- **Production Launch & PPAP:** Managed development milestones, prototype characterization, and component PPAP deliverables, ensuring seamless ramp-up to high-volume automotive production.
- **Procurement Operations and Strategic Sourcing:** Partnered with Commodity Manager to author RFQs for sensor components. Analyzed MEMS supplier proposals and evaluated performance capabilities. Supported strategic supplier selection and market awarding for key projects.
- **Supplier & Quality Management:** Led technical interface with global MEMS foundries/suppliers; supported product development at the supplier and conducted design and process reviews. Partnered with ZF Quality to resolve technical sensor deviations and audits.

Technical Project Manager

Jun 2013 – Dec 2014

CEA-Leti (Minatec) — Grenoble, France

- **Breakthrough R&D Management:** Managed end-to-end development of high-performance accelerometers utilizing innovative micro- and nano-electromechanical systems (M&NEMS®) technology (tasks planning and control, risk assessment and technical deliverables management, customer relationship management).
- **MEMS Design:** Designed of an innovative patented MEMS accelerometer.
- **Fabrication & Cleanroom Coordination:** Coordinated cross-departmental teams covering mask design and lithography.
- **Intellectual Property:** Co-inventor on patent **US10371711B2: “Damped Linear Accelerometer”**.

Inertial Sensor Expert

May 2012 – Dec 2012

Exail (formerly iXblue) — Lannion, France

- **FEM Multiphysics Modeling:** Developed comprehensive finite element models (ANSYS) simulating thermo-mechanical packaging stresses and read-out electronic effects on quartz-based inertial accelerometers.
- **Industrialization Readiness:** Optimized mechanical and thermal sensor behavior, successfully driving development to final industrialization readiness.

Senior MEMS Designer - Project Leader

Feb 2006 – May 2012

Institute for System Level Integration (ISLI) — Edinburgh, UK

- **Monolithic Integration:** Designed monolithic 3-axis piezoresistive accelerometers and pressure sensors on a dedicated CMOS-SOI process in partnership with Semfab foundry.
- **Packaging & Reliability:** Implemented complete wafer-level packaging solutions (BCB and anodic bonding), failure analysis protocols, and electrical characterization.
- **Grants & Consortium partnership:** Authored UK and European research grant proposals, building collaborative industrial consortia and securing project funding (Scottish Consortium in Integrated Micro-Photonic Systems (SCIMPS))
- **Mentorship & Academia:** Supervised MSc/PhD research theses in MEMS sensor design (“*Development and Design of an integrated Gimbal Gyroscope*”, “*Design of low-power hotplate for MEMS capacitive humidity sensors*” and “*Sigma-Delta modulator conditioning system for Pellistor-type Gas Sensors*”).

Served as guest lecturer in Mechanical Engineering at Heriot-Watt University.

Doctoral - Applied Researcher

Sep 2002 – Oct 2005

LIRMM & University of Catania — Montpellier, France & Catania, Italy

- Designed and fabricated CMOS-FSBM 3-axis accelerometers using piezoresistive and thermal transduction.
- Teaching and mentoring experience: Labs on Pspice simulation; Labs on C language; student project advisor “Active damping of resonant accelerometers using electromagnetic forces”, “Test of monolithic MEMS”.
- Authored multiple peer-reviewed papers in IEEE-sponsored international conferences and journals.

Intern Researcher

Apr 2001 – Jul 2001

LIRMM & CEM2 Laboratory — Montpellier, France

- Created innovative oscillation-based test methods for monolithic MEMS (Cadence, Analog Artist, Monte Carlo simulations, AHDL language).
- Developed an electronic readout circuit and performance evaluation of a thermopile and a vacuum sensor.

EDUCATION

Ph.D. in Microelectronics & MEMS — Université de Montpellier (France) & Università di Catania (Italy)

2002 – 2005

PhD thesis: “*Design and characterization of a 3-axis accelerometer in CMOS-FSBM technology (AMS CMOS technology)*”.

Postgraduate Degree (M.Res / DEA, Hons) in Microelectronics — Université de Montpellier, France

2001 – 2002

M.Sc. in Electronics Engineering — Université de Montpellier, France

2000 – 2001

PATENTS & PUBLICATIONS

Patents: US Patent US10371711B2 - “*Damped Linear Accelerometer*” (Co-inventor)

EU Patent EP3217181B1 - “*Accéléromètre linéaire amorti*” (Co-inventor)

Publications: Author of multiple papers in IEEE conferences & journals (chaehoi.com/Publications);

Technical translator of “*Nanotechnologies*” (M.Wautelet, IET 2009, 0863419416).

LANGUAGES

• **French:** Mother tongue • **English:** Full Professional / Fluent • **German:** Conversational (B2)