

CURRICULUM VITAE

Name, title:

Horia CHIRIAC, Prof. Dr.



Scientific degree:

Ph.D. in Physics

Position(s):

General Director of the National Institute of Research and Development for Technical Physics, Iasi, Romania;
Coordinator of the Centre of Excellence for Magnetic Materials and Their Applications of the Romanian Ministry of Education and Research - Department of Research

Linguistic knowledge:

English, French, Russian, Romanian (mother language)

Field(s) of research:

- Design and preparation of advanced amorphous and nanostructured materials as ribbons, wires, glass-covered wires, nanowires, micro and nanopowders, thin films and bulk shaped alloys, their magnetic/physical characterization and applications;
- Design and manufacture of new types of magnetic sensors and transducers based on amorphous and nanostructured magnetic materials and the specific effects appearing within (GMI, FMR, LGE, etc.), mainly for engineering and biomedical applications.

Management activities:

Preparation and management of national and international projects (EC - FP5 and FP6, Phare, NATO, governmental bilateral collaborations)

Membership, functions:

- Member of the American Physical Society, IEEE Magnetics Society, European Physical Society, Materials Research Society, Japan Institute of Metals, Romanian Physical Society (Head of the Condensed Matter Division), Romanian Magnetic Materials Society (Vice-president), European Magnetic (E-Mag) Society;
- Chairmen of the European Magnetic Sensors and Actuators (EMSA) Conference International Advisory Committee since 2000;
- Member of the Technical Committee of EUROSENSORS and MAGNETIC MEASUREMENTS Conference;
- Member of the Organizing Committee of the 1st European Magnetic Sensors and Actuators Conference, Iasi, Romania, July 1996 (Guest Editor of the Special Volume - devoted to this Conference), 2nd European Magnetic Sensors and Actuators Conference, Sheffield, UK, July 1998; 3rd European Magnetic Sensors and Actuators Conference, Dresden, Germany, July 2000; 4th European Magnetic Sensors and Actuators Conference, Athens, Greece, July 2002; 5th European Magnetic Sensors and Actuators Conference, Cardiff, UK, July 2004;
- Chairman of the Biennial Workshop Series International Workshop on Amorphous and Nanostructured (Nanocomposite) Magnetic Materials - ANMM (Iasi, Romania, September 2001, September 2003, and September 2005);
- Guest Editor of the EMSA'96 Conference Proceedings (Sensors and Actuators A59/1-3 (1997)); ANMM 2001 Conference Proceedings (Journal of Optoelectronics and Advanced Materials 4/2 (2002)); ANMM 2003 Conference Proceedings (Journal of Optoelectronics and Advanced Materials 6/2 (2004));
- Expert in the evaluation group of the European Commission for the research & development projects in the frame of the 5th and 6th EC Framework Programmes;
- Expert in the evaluation group of the Romanian Ministry of Education and Research for the national RTD projects and grants.

Awards, prizes, grants:

- 1995, "Stefan Procopiu" Award of the Physical Sciences Society of the Romanian Academy for the paper entitled "Internal Stress Distribution in Glass-Covered Amorphous Magnetic Wires" published in Physical Review B;
- 1995, JSPS Fellowship - Institute for Materials Research, Tohoku University, Sendai
- 2002, "Traian Vuia" Award of the Technical Sciences Society of the Romanian Academy, for the book "Magnetism Tehnic si Aplicat";
- 2000, Silver Medal at the "Salon International Des Inventions", Genève, April 2000, for the patent "Fils aimantés composés d'un cœur métallique et d'un revêtement en verre";
- 2000, Bronze Medal at the "Second Inventors' Olympiad - Genius 2000", Budapest, May 2000, for the patent "Amorphous and nanocrystalline wires coated by glass and method to produce them";
- 2002, Silver Medal at the "Salon International Des Inventions", Genève, May 2002, for the patent "Matrice magnetique";
- 2002, Gold Medal at the "51st World Exhibition of Innovation, Research and New Technology - EUREKA 2002", Brussels, October 2002, for the patent "Matière magnétique en forme de poudres et installation pour son fabrication";
- 2003, Gold Medal at the "Salon International Des Inventions", Geneve, April 2003, for the patent "Filtre électromagnétique pour réduire la pollution de gaz résiduels industriels";
- 2004, Singapore-Eastern Europe Research Scientists & Students Exchange & Collaboration Programme Fellowship - University of Singapore

Publications:

425 papers and 4 book chapters

Patents:

26 issued, from which 4 international; 69 new products and technologies certified since 1983

Citations:

Over 800 citations of 235 papers published in ISI journals

Teaching activity:

1992-1994, Invited Professor - Faculty of Physics, "Al. I. Cuza" University of Iasi, Romania;
1994-present, Associated Professor - Faculty of Physics, "Al. I. Cuza" University of Iasi, Romania;

1990-present, PhD Students Supervisor – “Al. I. Cuza” University of Iasi, Romania: 12 PhD and 6 PhD students.

The most representative papers published in the last years:

- (1) **Chiriac H**, Lupu N, *New FeNbB based bulk amorphous and nanocomposite soft magnets*, IEEE T MAGN 41 (10): 3289-3291 OCT 2005
- (2) **Chiriac H**, Lupu N, Fecioru AM, Óvári TA, *Surface magnetic anisotropy in nearly zero magnetostrictive CAW and GCAW by FMR measurements*, J MAGN MAGN MATER 290-291 (2): 857-860 APR 2005
- (3) Tufescu FM, Chiriac H, *Displacement and proximity sensors using Fe_{77.5}Si_{7.5}B₁₅, Fe_{73.5}Cu₁Nb₃Si_{3.5}B₉, and Co_{68.25}Fe_{4.5}Si_{12.25}B₁₅ amorphous micro-ribbon cores*, SENSORS AND ACTUATORS A-PHYSICAL 119 (2): 305-308 APR 13 2005
- (4) Astefanoaei I, Radu D, **Chiriac H**, *On dc Joule-heating effects in amorphous glass-covered Fe_{77.5}Si_{7.5}B₁₅ microwires*, JOURNAL OF PHYSICS D-APPLIED PHYSICS 38 (2): 235-243 JAN 21 2005
- (5) Neagu M, **Chiriac H**, Hison C, *Saturation magnetostriction of Fe_{72.5}-xCo_xSi_{12.5}B₁₅ glass covered amorphous wires*, SENSORS AND ACTUATORS A-PHYSICAL 115 (2-3): 490-493 SEP 21 2004
- (6) Marinescu M, Pawlik PC, Davies HA, **Chiriac H**, *Bulk nanocomposite RE-TM-M permanent magnets*, J OPTOELECTRON ADV M 6 (2): 603-608 JUN 2004
- (7) Lupu N, **Chiriac H**, Greneche JM, Inoue A, *Atomic ordering and magnetic properties in Nd₅₀Fe₄₀Al₁₀ glassy hard magnets*, J OPTOELECTRON ADV M 6 (2): 615-618 JUN 2004
- (8) **Chiriac H**, Tibu M, Dobrea V, Murgulescu I, *Thin magnetic amorphous wires for GMI sensor*, J OPTOELECTRON ADV M 6 (2): 647-650 JUN 2004
- (9) Ioan C, Tibu M, **Chiriac H**, *Magnetic noise measurement for Vacquier type fluxgate sensor with double excitation*, J OPTOELECTRON ADV M 6 (2): 705-708 JUN 2004
- (10) Curuia M, Iliescu M, Stefanescu I, Iacob G, **Chiriac H**, *Magnetic filter with HGMF matrix for industrial gases depollution*, J OPTOELECTRON ADV M 6 (2): 709-712 JUN 2004
- (11) Iacob G, Rotariu O, **Chiriac H**, *A possibility for local targeting of magnetic carriers*, J OPTOELECTRON ADV M 6 (2): 713-717 JUN 2004
- (12) **Chiriac H**, Lupu N, *Design and preparation of new soft magnetic bulk amorphous alloys and their applications*, MAT SCI ENG A-STRUCT 375-377C: 255-259 JUL 2004
- (13) **Chiriac H**, Marinescu M, *Surface tension of intergranular regions of NdFeB nanocomposite magnets*, MAT SCI ENG A-STRUCT 375-377C: 1032-1035 JUL 2004
- (14) Lupu N, McGreevy RL, **Chiriac H**, *Magnetic structure determination for Nd₉₀-xFe_xAl₁₀ glassy hard magnets using RMC modelling of neutron diffraction data*, MAT SCI ENG A-STRUCT 375-377C: 1105-1109 JUL 2004
- (15) **Chiriac H**, Moga AE, Urse M, Padurarur I, Lupu N, *Preparation and magnetic properties of amorphous NiP and CoP nanowire arrays*, J MAGN MAGN MATER 272-276 (3): 1678-1680 MAY 2004
- (16) **Chiriac H**, Murgulescu I, Lupu N, *The influence of the composition on the GMI effect in low magnetostrictive amorphous microwires*, J MAGN MAGN MATER 272-276 (3): 1860-1861 MAY 2004
- (17) Neagu M, **Chiriac H**, Lozovan M, Hison C, *Magnetic and magnetoelastic properties of Ni-Cu-Mn-Ti-Mo alloys*, J MAGN MAGN MATER 272-276 (3): 2055-2057 MAY 2004
- (18) Stoleriu L, Cimpoesu D, Stancu A, Lupu N, **Chiriac H**, *Micromagnetic model for magnetisation processes in RE-TM based-amorphous alloys*, J MAGN MAGN MATER 272-276 (S): E1113-E1114 MAY 2004
- (19) Lupu N, **Chiriac H**, Takeuchi A, Inoue A, *Nanoclusters - critical thickness - magnetic properties relationship in Nd₉₀-xFe_xAl₁₀ amorphous ribbons*, J MAGN MAGN MATER 272-276 (S): E1137-E1139 MAY 2004
- (19) **Chiriac H**, Marinescu M, *Anomalous magnetic relaxation in rapidly quenched Nd-Fe-B ribbons*, J MAGN MAGN MATER 272-276 (S): E1943-E1945 MAY 2004
- (20) Rotariu O, Iacob G, Strachan NJC, **Chiriac H**, *Simulating the embolization of blood vessels using magnetic microparticles and acupuncture needle in a magnetic field*, BIOTECHNOL PROGR 20 (1): 299-305 JAN-FEB 2004
- (21) **Chiriac H**, Lupu N, Tibu M, *Design and preparation of new Fe-based bulk amorphous alloys torroids*, IEEE T MAGN 39 (5): 3040-3042 Part 1 SEP 2003
- (22) **Chiriac H**, Lupu N, *Effect of thermal treatments on the magnetic inhomogeneities distribution in magnetic amorphous wires and microwires*, IEEE T MAGN 39 (5): 3043-3045 Part 1 SEP 2003
- (23) **Chiriac H**, Moga AE, Urse M, Ovari TA, *Preparation and magnetic properties of electrodeposited magnetic nanowires*, SENSOR ACTUAT A-PHYS 106 (1-3): 348-351 SEP 15 2003
- (24) **Chiriac H**, Hison C, *Mechanical behavior of nanocrystalline Fe-Hf-B ribbons*, J MAGN MAGN MATER 254: 475-476 Sp. Iss. SI JAN 2003
- (25) **Chiriac H**, Ovari TA, *Magnetic properties of amorphous glass-covered wires*, J MAGN MAGN MATER 249 (1-2): 46-54 AUG 2002
- (26) **Chiriac H**, Ovari TA, *Giant magnetoimpedance effect in soft magnetic wire families*, IEEE T MAGN 38 (5): 3057-3062 Part 1 SEP 2002
- (27) **Chiriac H**, Lupu N, *Coercivity and phase transitions of clustered Nd₉₀-xFe_xAl₁₀ bulk hard magnets*, MATER TRANS 43 (8): 1992-1999 AUG 2002
- (28) **Chiriac H**, Lupu N, Greneche JM, *Magnetic and structural studies in Nd₅₀Fe₄₀Al₁₀ glassy hard magnets*, J MAGN MAGN MATER 242: 1310-1313 Part 2 APR 2002
- (29) **Chiriac H**, Moga AE, Urse M, Hison C, *Structural and magnetic investigation of mechanically alloyed Fe₈₀Co₅(Nb_xZr_{1-x})(⁷)B-8 powders*, J NON-CRYST SOLIDS 287 (1-3): 50-54 JUL 2001
- (30) **Chiriac H**, Lupu N, *New bulk amorphous magnetic materials*, PHYSICA B 299 (3-4): 293-301 JUN 2001
- (31) Tomut M, **Chiriac H**, *Viscosity and surface tension of liquid Fe-metalloid glass-forming alloys*, MAT SCI ENG A-STRUCT 304: 272-276 Sp. Iss. SI MAY 31 2001
- (32) **Chiriac H**, Hison C, *Influence of laser irradiation on magnetic properties of Co-Fe-Si-B amorphous ribbons*, MAT SCI ENG A-STRUCT 304: 1066-1068 Sp. Iss. SI MAY 31 2001
- (33) **Chiriac H**, Ovari TA, Marinescu CS, *Large gyromagnetic effect in soft magnetic amorphous ribbons and wires*, J MAGN MAGN MATER 215: 413-415 Sp. Iss. SI JUN 2000
- (34) **Chiriac H**, Marinescu M, Castano FJ, *Nd₈Fe₇₃Co₅Hf₂B₁₂ strip cast alloy*, J APPL PHYS 87 (9): 5338-5340 Part 2 MAY 1 2000
- (35) **Chiriac H**, Pletea M, Hristoforu E, *Fe-based amorphous thin film as a magnetoelastic sensor material*, SENSOR ACTUAT A-PHYS 81 (1-3): 166-169 APR 1 2000
- (36) **Chiriac H**, Yamasaki J, Ovari TA, Takajo L, *Magnetic domain structure in amorphous glass-covered wires with positive magnetostriction*, IEEE

T MAGN 35 (5): 3901-3903 Part 2 SEP 1999

(37) **Chiriac H**, Ovari TA, Marinescu CS, Knobel M, *Role of soft magnetic properties on the sensitivity of the giant magneto-impedance effect*, MATER SCI FORUM 302-3: 234-238 1999

(38) **Chiriac H**, Colesniuc CN, Ovari TA, Ticusan M, *In situ investigation of the magnetization processes in amorphous glass-covered wires by ferromagnetic resonance measurements*, J APPL PHYS 85 (8): 5453-5455 Part 2B APR 15 1999

(39) **Chiriac H**, Marinescu M, *Magnetic properties of Nd₈Fe₇₇Co₅B₆CuNb₃ melt-spun ribbons*, J APPL PHYS 83 (11): 6628-6630 Part 2 JUN 1 1998

(40) **Chiriac H**, Ovari TA, Pop G, Barariu F, *Amorphous glass-covered magnetic wires for sensing applications*, SENSOR ACTUAT A-PHYS 59 (1-3): 243-251 APR 1997

(41) **Chiriac H**, Tomut M, Naum C, Necula F, Nagacevschi V, *On the measurement of surface tension for liquid FeSiB glass-forming alloys by sessile drop method*, MAT SCI ENG A-STRUCT 226: 341-343 JUN 15 1997

(42) **Chiriac H**, Ovari TA, Pop G, Barariu F, *Magnetic behavior of nanostructured glass covered metallic wires*, J APPL PHYS 81 (8): 5817-5819 Part 2B APR 15 1997

(43) **Chiriac H**, Ovari TA, *Amorphous glass-covered magnetic wires: Preparation, properties, applications*, PROG MATER SCI 40 (5): 333-407 1996

(44) **Chiriac H**, Ovari TA, Pop G, *Internal-stress distribution in glass-covered amorphous magnetic wires*, PHYS REV B 52 (14): 10104-10113 OCT 1 1995

(45) **Chiriac H**, Pop G, Barariu F, Vazquez M, *Magnetic-behavior of the amorphous wires covered by glass*, J APPL PHYS 75 (10): 6949-6951 Part 2B MAY 15 1994