

Curriculum Vitae

Manuela Codruta Badea



Personal Details

Name: Manuela Codruta Badea
Date of birth: 14 June 1974
Residence: Cluj Napoca, Romania
Telefon: +40-721-796672
Email: badeacodruta@yahoo.com

Profile summary: I'm a driven scientist professional with both strong analytical skills as well as excellent communicative skills. I believe integrity and enjoyment in work are essential ingredients for high quality results. Colleagues describe me as a dedicated, flexible person and appreciate my calm response to unexpected or stressful situations. I have the capacity of observing the global situation of a problem. I have been developing good skills by interacting with different people experience and I enjoy working in a dynamic, multicultural environment with intellectual challenges and teamwork.

Working Experience

2008 – present

Lecturer

Phyics and Chemistry Department, Materials Engineering and Enviromental Faculty, Technical University of Cluj Napoca, Cluj Napoca

Physics and Chemistry Department has, beside teaching activities, the best research groups in nanotechnology and porous materials from the Technical University of Cluj Napoca. My responsibilities include:

- Leading an interdisciplinary team for international research grants (2016,2017,2018,2019) with an international automotive supplier: Brose Fahrzeugteile GmbH & Co. KG, Germany
- Connection with local industry for developing a new processing line according with the research grant area
- Performing research in NMR in porous materials group
- Teaching in English and Romanian general physics courses, seminars and laboratories for the students in the first year of study for Civil Engineering, Faculties of: Civil Engineering, Electronics, Computer and Automatics, Mechanics
- Studies on the cementitious materials concerning the early hydration of the simple and additivated cement paste and on the ettringite formation
- Studies on the ageing processes in the precursor and coating solution used in thin film depositions

- Producing and characterising of the new core-shell polymeric capsules used as drug carriers with respect to their stability and transport properties of the polymeric shell
- Attending national and international workshops and conferences
- Supervising the research of PhD students
- Guarding timelines of teaching programs
- Writing exams

2001 – 2008

Lecturer assistant

My activities included:

- Studies on the molecular dynamics of the confined molecules
- Teaching in English and Romanian general physics courses, seminars and laboratories for the students in the first year of study for Civil Engineering, Faculties of: Civil Engineering, Electronics, Computer and Automatics, Mechanics
- Studies on the stress and strain inside prismatic bars with key sets subjected to loads using photoelasticity and interferometry methods – Shadow moire
- Organizing and executing workshops and presentations
- Attending NMR presentation in NMR diffusometry and relaxometry laboratory group
- Attending national and international workshops and conferences
- Organizing international conference, DANUBIA ADRIA.

1997-2001

Researcher and PhD Student

Strength of Materials Department, Mechanical Faculty, Technical University of Cluj Napoca, Cluj Napoca

Strength of Materials Department has, beside teaching activities, the unique groups in photomechanics and interferometric methods applied to the load subjected samples from Romania. My main responsibilities included:

- Teaching Strength of Materials for the students from second and third year of study
- Teaching Finite Element Method - FEM -for the students from the third year of study
- Researching on biomechanics using interferometric methods – shadow moire – and photomechanic methods
- Attending workshops and conferences
- Organizing international conference, DANUBIA ADRIA.

Teaching experiences:

- General physics, seminars, practical work and courses in English and Romanian
- Strength of materials, seminars and practical work
- Finite element methods simulations, practical work

Student supervision:

- Supervision of student projects in collaboration with French Universities.

Education and trainings

2005- 2007 **PhD**
Technical University of Cluj Napoca, Cluj Napoca

PhD Thesis: “Stress studies by optical methods with application in machines’ buiding”

How to determine faster why a piece of machine building is damaged without replicate it? Answers to this problem can be found in my work. First of all the problems were studied using experimental methods, such as Photoelasticimetry in polarized light and Shadow Moire and compared to the theory. Then I apply the Finite Element Method and Finite Element Analyze to compare the obtained results. I successfully combined theory with experimental data and numerical simulation showing that optical methods can be a reliable tool in mechanical and biomechanical applications.

1999 – 2000 **Master Degree in AAEICM** - Assisted analysis and experimental research in mechanical engineerings
Mechanical Faculty, Technical University of Cluj Napoca, Cluj Napoca

1997-1998 **Master Degree in Optics and Spectroscopy of laser materials**
Vest University of Timișoara, Physics Faculty, Timisoara

1992-1997 **Physics Faculty**
Vest University of Timișoara, Physics Faculty, Timisoara

1988-1992 **Lyceum**
Lyceum “Tata Oancea”, Bocsa

Trainings

- 2012, specialization within a **Humbold Project**: T1, spin latice measurements on the aditived cement paste samples and the influence Supersplasticisers and Hyperplasticisers on the observed data, Ilmenau, Germany
- 2008, July, Nuclear Magnetic Resonance in Condensed Matter, “**NMRCM**” **Summer School** St. Petersburg, Russia
- 2004 Workshop ‘Frontiers of magnetic resonance applications to Nano- and Microscopically Structured Systems’, Păltiniș, Sibiu county, România
- 1998, 1999, 2000 Workshop “Optical methods used in experimental stress analysis” Cluj-Napoca, Cluj county, România
- 1999 **TEMPUS** Scholarship: Optical methods used in experimental stress analysis Mechanic of Solid Laboratory, Poitiers University, France

Key Laboratory skills

- NMR in low field in porous materials using NMR analyzer Bruker MQ 20
- Low field NMR applied for the ageing processes in the precursors and coating solutions used in thin films deposition
- Low field NMR in additivated and non-additivated cementitious materials
- Fast Field Cycling (FFC) NMR using Stellar Spin Master Relaxometer
- Relaxometry and diffusion of nanocapsules studied using NMR in low-field
- Stress and strain analysis using FEM/FEA software
- Photoelasticimetry in transmitted polarised light
- Photoelasticimetry in reflected polarised light
- Interferometric methods – Shadow Moire

Language and Computer Skills

- English, fluently speaking
- French: fluently speaking
- German: basics
- FEM/FEA using Strength of Materials softwares: ANSYS, ALGOR, RDM
- User of Origin 8, MsOffice 2000-2013, Designer 9, Math Cad, Surfer, Grafer

Awards

- **The first place** for the “Best Oral Presentation” with the presentation “Photoelasticity methods applied in biomechanics”, *Four Seas Conference*, Iași, 2007
- **The first place** at the “Students from the Mechanical Faculty scientific workshop”, PhD students Session, with the paper “Using Shadow moire methods to study the two key-sets circular cross section bars subjected to torsion”, Cluj Napoca, 2006

Research Grants

- **Project Manager** 2016,2017,2018,2019 for research grant in collaboration with an international automotive supplier: Brose Fahrzeugteile GmbH & Co. KG, Germany, leading an interdisciplinary research team
- **Project Manager** for the CNCSIS Grant – Optical methods applied in prismatic bars subjected to torsion, 2001-2003
- **Member**, Joint research project with Ulm University, Germany (*Project funded by the Alexander von Humboldt foundation*) 2003-2008, Ardelean Ioan - project manager: Transport und Kernspin-Relaxationsphänomene in Porösen Medien”.
- **Member**, grant type PNCDI-CERES 4-36/2004-2006, I.Ardelean – project manager, Principles and nonconventional aspects of the confined liquids diffusometry
- **Member**, grant type CEE X MATNATECH 58/2006, I. Ardelean - project manager, Molecular dynamics in polymeric nanocapsules. Nuclear Magnetic Resonance investigations
- **Member**, grant type CNCSIS A/COD 1292/2006, Ardelean Ioan - project manager Study of the polar and apolar molecules dynamics confined in nano- and micro- structures.

- **Member**, grant type PN2-NANOQMED 61-002/2007-2010, Ardelean Ioan - project manager, Obtaining and characterization of new target nano-medicines with naftochinonic active substance.
- **Member**, Joint research project with Technical University Ilmenau, Germany (funded by the Alexander von Humboldt foundation) 2011-2014, Ardelean Ioan - project manager: Molecular dynamics during the phase transition of liquids confined inside porous media.
- **Member**, Project PN II ID PCE 3-0238/ 2011-2014, Ardelean Ioan - project manager: Nuclear magnetic resonance studies of surface effects on dynamics of molecules confined inside porous media with magnetic impurities.

Extracurricular activities and interests

- Councillor in West University of Timisoara
- Side jobs during studies as saleswoman in Forever Living Products.
- Organizer of the international students festivals ISWINT(1995,1996, 1997) and international art festivals STUD FEST (1996, 1997)
- I love to read and I am especially interested in science, science fiction, psychology and communication
- In my spare time I like to dance and watch movies
- I love sport like tennis, ice skating, cycling, horse riding
- I played guitar.