

Habilitation Thesis:

Glasses and glass ceramics doped with transition metal or rare earth ions: synthesis, structure and properties

– Abstract –

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The Habilitation Thesis presents the didactic and scientific research activity *carried out* by the author after the *public presentation, on 14 of July, 2004*, of his doctoral thesis at "Babeș-Bolyai" University of Cluj-Napoca and the obtaining of the *PhD title*, confirmed by the Order of the Ministry of Education and Research no. 5237 of 05/11/2004.

The Habilitation Thesis is structured in three sections:

- professional and academic achievements;
- the main scientific results;
- prospects of university career development.

The first section summarizes the didactic and the research activity of the candidate between 2006-2017.

The didactic activity consisted of lectures, laboratory and seminar classes taught at the Technical University of Cluj-Napoca and of laboratory classes taught at the University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca. The candidate is the author of 2 textbooks and 3 laboratory guides.

The research activity of the candidate resulted in the publication of a book at a national publishing house, of 66 articles in ISI journals and in multiple participations in national and international conferences. During the mentioned period, the author of the thesis coordinated as manager a research project (awarded by national competition) and participated as a member in the team of 5 national research projects. The scientific impact of the results obtained between 2006-2017 is very

good, *being reflected* in the considerable number of citations in ISI or BDI journals (919 according to Web of Science, 966 according to Scopus and 1103 according to Google Academic). Considering all author's publications from 2006-2017, the *assigned* Hirsh factor is 18 - according to Web of Science and Scopus, 17 - according to Scopus without self-quoting and 19 - according to Google Academic. Also, during this period, the author reviewed articles for 23 ISI journals.

The scientific results presented in the second section constitute the core of the Habilitation Thesis and *represent* a part of the results obtained from the research activities carried out at the Technical University of Cluj-Napoca between 2008-2017. Thus, the *Habilitation Thesis* presents the results published in 13 articles for which the candidate is *the first author or correspondent author*, published between 2008-2015 in 9 ISI journals. The scientific impact of these 13 articles is very good, being visible through many citations in ISI rated / indexed journals: 398 citations (378 without self-quoting) according to Web of Science. This section is *structured* in 5 parts. The first part *contains* the list of *papers* presented in the Habilitation Thesis. Part two *describes* the conditions for the preparation of the samples and the used *measurement* techniques. In the last three chapters of the section the experimental results obtained from the study performed on glasses and glass ceramics doped with transitional metal ions (iron or manganese), rare earths ions (gadolinium or europium), as well as on glass ceramics doped with europium ions and co-doped with fixed amounts of silver (Ag₂O or Ag metal nanoparticles) are presented and interpreted. At the end of *each* of the three chapters there is a bibliographic list of more than 250 titles, which contains more than 20 author's publications *focused* on the topic dealt within this paper.

The third section of the Habilitation Thesis presents a proposal for the development of the university career, as well as the future research directions of the author.