



ROMANIA
MINISTRY OF EDUCATION
University "Vasile Alecsandri" of Bacau
Calea Marasesti, No. 157, Bacau 600115
www.ub.ro; e-mail: rector@ub.ro



HABILITATION THESIS

SUMMARY

STUDIES AND RESEARCH RELATED TO THE WASTEWATER AND SLUDGE TREATMENT METHODS AND TECHNIQUES

DOMAIN: ENVIRONMENTAL ENGINEERING

Assoc.prof.PhD.Eng. Narcis BARSAN

University "Vasile Alecsandri" of Bacau

A. SUMMARY

The habilitation thesis entitled „STUDIES AND RESEARCH RELATED TO THE WASTEWATER AND SLUDGE TREATMENT METHODS AND TECHNIQUES” is a general presentation of the professional, scientific and academic activities specific to the doctoral and postdoctoral internship (2008-2011-2023) and main perspectives in the fields of research of interest.

This thesis is structured in two parts and the content reflects both the experience gained and the main contributions and scientific perspectives specific to the academic career. The content of the habilitation thesis includes the priority research directions at national and European level specific to the field of environmental engineering.

Research directions approached after the presentation of the doctoral thesis were oriented in principle on the same topics, respectively: the evaluation of water quality and some possibilities to highlight the sources of pollution but also regarding the treatment techniques; wastewater treatment characteristics and techniques; sludge characterization methods and treatment techniques. Thus, the content of the habilitation thesis is based on the three research directions mentioned above, but also on other interdisciplinary directions that have been approached during the teaching and research career.

The first research direction, **Assessment of water quality and possibilities to investigate pollution sources and water treatment techniques**, was developed based on the integrated concept of water management and connections between pollution, monitoring of quality indicators and type of sources of water. The second research direction, **Evaluation of wastewater quality indicators and methods and techniques for their treatment**, was initiated on the basis of the doctoral thesis, respectively Wastewater treatment and possibilities to increase the degree of treatment in the case of low capacity stations. This is the main research direction initiated in 2008 and was based on the issue of wastewater management, especially in decentralized areas, with the identification of methods and techniques implemented for the treatment of domestic wastewater treatment in sequential low-capacity systems. The third direction of research, Possibilities of treatment of sewage sludge, developed as a specific continuation of the field of wastewater

treatment with the establishment of links between their categories, their properties and the methods of treatment / recovery / disposal of sludge, in the context of integrated waste management.

Other research directions have involved research topics specific to the field of environmental or interdisciplinary engineering such as: studies and research on the variation of air quality in urban areas, ecological products, their labeling; separation processes used in industry.

During the period 2008-2011 I carried out my doctoral activity at the “Vasile Alecsandri” University of Bacău, Faculty of Engineering, under the coordination of prof.dr.eng.dr.hc. Valentin NEDEFF. In 2011 I defended my doctoral thesis entitled "**Studies and research to increase the treatment capacity of small municipal wastewater plants.**" During my PhD I did an internship at the Polytechnic University of Turin, Italy, Department of Environmental Engineering, Territory and Infrastructure.

In 2012, I obtained through the competition the position of assistant professor at the “Vasile Alecsandri” University of Bacău, the Faculty of Engineering, the Department of Environmental Engineering and Mechanical Engineering. Also, through a competition, I obtained the position of lecturer in 2015 and from 2019 I held the position of associate professor in the same department.

Relevant scientific and research activities, from 2010 to date, can be structured as follows:

a) Published scientific papers: 61 scientific articles in ISI journals, of which 32 as lead author (first or corresponding author); 17 articles published in ISI/SCOPUS proceedings; 40 scientific articles in journals indexed by BDI; 23 papers presented at international conferences; a patent application. b) Published books: 7 published books, two of which I was the first author. c) Research contracts: Research contracts with economic agents, 10 as director and 15 as member; Development contracts that include national/international funds - member in 7 contracts. e) Other research activities (visibility of the research activity): 522 citations (including self-citations), h index 12, according to Google Scholar; 419 citations (including self-citations), h index 13, according to Scopus (AU-ID „Bârsan, Narcis” 55596523500); 286 Web of Science Researcher citations, h index 10 (ID: N-7433-2014); member of 5 editorial teams of international journals; member of two doctoral commissions; member of doctoral student teams; reviewer for more than 50 international journals with over 230 reviews quantified in the PUBLONS/ Web of Science platform (N-7433-2014).

Taking into account professional experience in the fields of research, namely: Wastewater collection and transport systems; Wastewater treatment; Treatment of sewage sludge; Water treatment for different requirements; Methods and techniques for environmental protection, the main research directions that I intend to develop are: **a) Research activities in the faculty laboratories:** proposal and implementation of new techniques through which the research activity in specialized laboratories can be recognized nationally and international; expanding the activity by implementing new technologies; coordination of specialized and/or interdisciplinary research teams and extension of national and international collaboration; collaboration with different economic agents interested in the research activity; obtaining national and international research and development projects in order to finance these researches. **b) Valorization of research results by publishing scientific papers:** articles in prestigious journals; specialty books; participation in scientific events and conferences with the publication of the presented papers; maintaining and expanding involvement in editorial and review committees for international journals. Future research results will be highlighted through the publication of articles and books, as well as through direct involvement in the implementation of research projects. I will also continue to support the research teams as a member or coordinator. The proposed professional and scientific activities aim to contribute to the field of environmental engineering, to the development of new collaborative links and to the increase of international recognition.