



Universitatea
Transilvania
din Braşov

ADMITERE DOCTORAT 2020-2021
Sesiunea Septembrie 2020

Şcoala Doctorală Interdisciplinară
(SDI)

Domeniul de doctorat:
Ingineria Materialelor
Conducător doctorat:
Prof. dr. ing. Anca DUTA

TEME (TEMATICĂ) PENTRU CONCURS

TEMA 1: *Materiale compozite cu matrice de oxid metalic si umplutura de compusi carbonici cu proprietati fotocatalitice solar- si VIS-active*

Conţinut

1. Materiale compozite pentru straturi subtiri fototacatlitice solar- si VIS-active
2. Materiale compozite fotocatalitice cu matrice de TiO₂ si ZnO
3. Stabilitatea materialelor compozite. Calitatea interfetelor
4. Calitatea interfetelor pentru compozite TiO₂ – derivati de grafena. Limite datorita stabilitatii termice a derivatilor de grafena

Principalele aspecte abordate - se va adapta /completa/elimina, după caz

Bibliografie recomandată:

1. Mills A., Le Hunte S., *An overview of semiconductor photocatalysis*, Journal of Photochemistry and Photobiology A: Chemistry, 108, 1997, pag. 1-35
2. Andronic L., Duţă A., *Analize fizico – chimice şi metode avansate de epurare a apelor uzate*, Editura Universităţii „Transilvania”, Braşov, 2013
3. Duta A., Enesca A., Isac L., Perniu D., Andronic L., Bogatu C., *Thin Film Vis-Active Photocatalysts for Up-scaled Wastewater Treatment*, pag. 521–538, in: Visa I. (eds) Sustainable Energy in the Built Environment – Steps Towards nZEB, Springer, Cham Switzerland, 2014
4. Byrne C., Subramanian G., Pillai S. C., *Recent advances in photocatalysis for environmental applications*, Journal of Environmental Chemical Engineering, 6, 2018, pag. 3531–3555
5. Rehman S., Ullah R., Butt A. M., Gohar N. D., *Strategies of making TiO₂ and ZnO visible light active*, Hazardous Materials, 170, 2009, pag. 560–569
6. Li X., R. Shen R., Ma S., Chen X., Xie J., *Graphene - based heterojunction photocatalysts*, Applied Surface Science, 430, 2018, pag. 53-107
7. Azami M. S., Jalil A. A., Hitam C. N. C., Mamat C. R , Siang T., Hussain I. , Hambali H. U., *A Contemporary Assessment on Composite Titania onto Graphitic Carbon Nitride-Based Catalyst as Photocatalyst*, Journal of Energy and Safety Technology, 02:01, 2019, pag. 21-25

Conducător doctorat:

Prof. dr. ing. Anca Duta



Transilvania
University
of Brasov

ADMISSION TO DOCTORAL STUDIES

2020-2021

Session September 2020

Interdisciplinary Doctoral School
(SDI)

Field of doctoral studies:
Materials Engineering
PhD supervisor:
Prof. dr. eng. Anca DUTA

TOPICS FOR THE ADMISSION TO DOCTORAL STUDIES

TOPIC 1: Composite materials with metal oxide matrix and carbonaceous filler with photocatalytical properties unde VIS- and solar radiation

Content /

1. Composite materials for thin photocatalytic layers unde solar- and VIS-radiation
2. Composite photocatalytic materials with TiO₂ and ZnO matrix
3. The stability of composite materials. The interface quality
4. Interface quality in composites TiO₂ – graphene derivatives. Limitation induced due to the poor thermal stability of graphene derivatives

Recommended bibliografy:

1. Mills A., Le Hunte S., *An overview of semiconductor photocatalysis*, Journal of Photochemistry and Photobiology A: Chemistry, 108, 1997, pag. 1-35
2. Andronic L., Duță A., *Analize fizico – chimice și metode avansate de epurare a apelor uzate*, Editura Universității „Transilvania”, Brașov, 2013
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Prerequisites / Remarks:

PhD supervisor:

Prof. dr. eng. Anca Duta