



EVROPSKA UNIJA



VLADA RUMUNIJE



VLADA REPUBLIKE SRBIJE



Strukturalni fondovi
2007 - 2013



SAOPŠENJE

Nabavka opreme u okviru projekta „Pole of Collaboration in New Functional Alloys“

U okviru IPA programa prekogranične saradnje Rumunija-Republika Srbija i projekta POCAL: „Saradnja u novim funkcionalnim legurama (Pole of Collaboration in New Functional Alloys), a u cilju realizacije aktivnosti br. 7 u Institut za rudarstvo i metalurgiju Bor nabavljena je i instalirana sledeća oprema:

1. SEM-EDS (skening elektronski mikroskop sa energetskom-disperzijom X-zraka spektroskopijom); i
2. DTA-TGA-DSC (uređaj za diferencijalno termijsku analizu, termogravitometrijsku analizu i diferencijalnu skenirajuću kalorimetriju).

SEM-EDS se koristi za kvalitativnu identifikaciju faza, određivanje oblika i veličine čestica, analizu vrlo sitnih i finih detalja u strukturi materijala, utvrđivanje identiteta prisutnih faza, njihovu orijentaciju, nehomogenosti i defekte strukture materijala.



SEM-EDS se može primeniti u različitim oblastima nauke:



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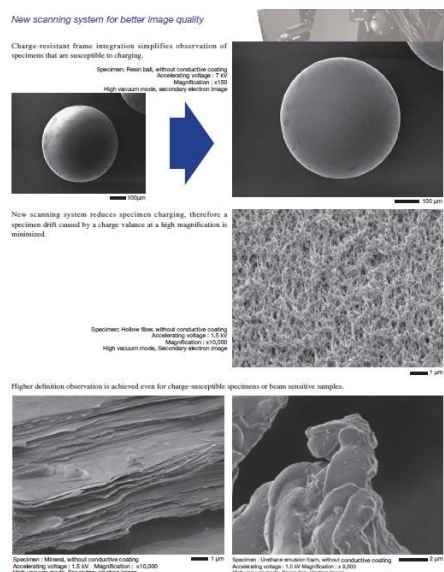
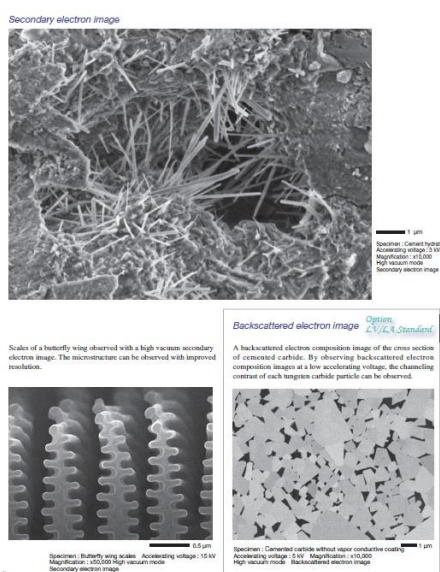
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- Geologija (minerali i fosili)
- Rudarstvo (rudarski otpadni materijal, pepeo)
- Nauka o materijalima i tehnologije (polimeri, nanomaterijali, metali, tekstil)
- Metalurgija (metali i legure, varovi, troske)
- Mašinsko inženjerstvo (varovi, defekti)
- Biologija (listovi biljaka i pigmenti)
- Medicina (kamen u bubregu, zubi)
- Hrana (kvasac, skrob)
- Arheologija (fosili, ostaci, zaštita spomenika)



DTA-TGA-DSC je uređaj za grupu tehnika kojima se mere fizičke osobine materijala i/ili reakcionih proizvoda kao funkcija temperature dok je materijal izložen kontrolisanom temperaturskom programu.

Tipične oblasti primene termijskih metoda analize i DTA-TGA-DSC uređaja su:

- Temperature i toplote faznih prelaza
- Određivanje faznih dijagrama
- Određivanje toplotnih kapaciteta
- Ispitivanje termičke stabilnosti
- Izmene mase
- Odnos adsorbovane prema hemijski vezanoj vodi
- Reakciona kinetika
- Zapaljivost i brzina sagorevanja
- Efikasnost katalizatora



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- Reaktivnost metala sa gasovima
- Karakterizacija polimernih materijala
- Ispitivanje kvaliteta keramike i minerala
- Određivanje Kirijeve temperature
- Ispitivanje modula elastičnosti
- Određivanje termičkog koeficijenta širenja

LABSYS evo



LABSYS evo is a user friendly, robust and highly powerful thermal analysis platform.

HIGHLIGHTS include:

- A comprehensive line of thermal analyzers with two temperature ranges chosen and optimized for distinct families of application:
 - RT – 1 150 °C, a cost effective solution mostly (but not only) for organic materials studies (polymers, pharmaceuticals, petroleum by-products...)
 - RT – 1 600 °C, for demanding high temperature experiments involving mostly (but not only) inorganic materials like ceramics or metals.
- A top loading balance designed specifically for thermal analysis applications featuring unmatched stability, reproducibility and accuracy.
- Plug & play TGA, DTA, DSC and CP rods for the best Simultaneous Thermal Analysis experience users can get.
- A 30 samples/6 references autosampler able to automatically configure to the different sensors and crucibles.

GAS FLOW CONTROL

As many of the TGA and STA applications are gas-solid reactions, an accurate atmosphere control is a key point for a successful measurement.

Obviously, LABSYS evo is equipped with the possibility of gas flow (inert or reactive). A fully automated gas control panel with Mass Flow Controllers is also available as an option:

- Selection from 3 different carrier gases (flow rate: 4 to 200 ml/min),
- Mixing of these carrier gases with another auxiliary or reactive gaseous fluid (flow rate: 0.3 to 16 ml/min).

THERMOBALANCE & FURNACE

At the heart of the LABSYS evo is an advanced coiled metal furnace existing in two distinct temperature ranges (1 150 °C and 1 600 °C). It has been designed to provide a homogeneous temperature zone covering both the sample crucible and the measurement rod area. It is a key point for an accurate temperature determination of thermal events, and for stable DTA/DSC signals. The crossing furnace is ideally designed to be efficiently coupled to a gas analyzer.

The top loading, thermostated balance of LABSYS evo was specifically designed for thermogravimetric analysis measurements and is manufactured in our workshops. It is based on the technique of a beam articulated around a torsion band, the most appropriate design for a stable and robust balance. It guarantees a reliable and sensitive measurement.



Schematic representation of the carrier (red) and auxiliary (orange) gas flows

INSPIRING IMAGINATION FOR MATERIAL SCIENCE

Značaj dobijene opreme ogleda se i u proširenju asortimana i pronalaženju specifičnih tehnoloških rešenja za dobijanje tzv. pametnih legura koje mogu biti konkurentne u prekograničnom regionu, ali i na svetskom tržištu.



Kontakt:

dr Ana Kostov, naučni savetnik
Tel. 030 454 108
E-mail: ana.kostov@irmbor.co.rs
Datum: 14.07.2016.