

Short Course DIGITAL METALLOGRAPHY

October 22-23, 2019

De los Arroyos Apart Hotel, San Nicolas, Argentina

<u>Instructor</u>	<u>Public & Objective</u>	<u>Outline</u>	<u>Evaluation</u>	<u>Venue & Timing</u>
<u>Hotels</u>	<u>Transport</u>	<u>Fee</u>	<u>Registration</u>	<u>Payment</u>

Instructor:

Mr. Cristian Genzano. He has worked in different capacities from 1994 to 2008 at IAS (Argentina Iron & Steel Institute), including metallographic studies on a variety of samples for many industries. Since 2009, he is the owner of GM Representaciones, a company involved in commercialization of equipment, supplies and services for met, chem and physical labs and non-destructive testing.

Public aimed: Technicians working in met labs of the automotive, auto parts, oil and gas, metal-mechanics, foundries, iron & steel and other industries producing, processing or using metals.

Objective: To be able to use the tools of image analysis for management of micrographs and the evaluation of metallographic variables, such as grain size, non-metallic inclusions, phase counting, decarburization, thickness of galvanized layer, thickness of carburized layer, nodularity, nodular graphite size, graphite type in gray iron.

Hours: 16 hours

Outline

1. **Quantitative metallography**
Background. Fundamentals. Digital cameras. Alternatives. Selection.
2. **Micrographs**
How to take micrographs, how to keep dimensional traceability. Which measurements are possible. Practice in microscopes, including positioning of the digital camera, taking micrographs and the software management.
3. **Grain size**
Why it is measured. How it is measured (three methods). Standards that apply. Short description of menu for determinations. Practice with diverse micrographs of different materials.
4. **Inclusions**
Why are they assessed. How are they assessed. Standards that apply. Short description of menu for determination. Practice with diverse micrographs of different materials.
5. **Phase counting**
Why it is determined. How it is determined. Standards that apply. Short description of menu for evaluation. Practice with diverse micrographs of different materials.

6. Decarburization

Why it is assessed. How it is measured. Standards that apply. Short description of menu for evaluation. Practice with diverse micrographs of different materials.

7. Thickness of galvanized layer

Why it is assessed. How it is measured. Standards that apply. Short description of menu for evaluation. Practice with diverse micrographs of different materials.

8. Nodularity and grain size

Why it is assessed. How it is measured. Standards that apply. Short description of menu for evaluation. Practice with diverse micrographs of different materials.

9. Graphite type in gray iron

Why it is assessed. How it is measured. Standards that apply. Short description of menu for evaluation. Practice with diverse micrographs of different materials.

Attendants may bring samples or micrographs for practice during the course.

Evaluation: At the end of the course, an evaluation based on ten questions with multiple choice answers is proposed.

Venue & timing: De los Arroyos Apart Hotel, 385 Mitre street, San Nicolas, Argentina. 8.30 am to 5 pm

Hotels:

De Los Arroyos Apart Hotel, phone/fax 54 336 445 6997,

reservas@delosarroyosapart.com.ar

San Nicolas Plaza Hotel, phone/fax 54 336 442 5800, reservas@snplazahotel.com

Igüeldo Hotel Boutique, fone/fax 54 336 442 3633, reservas@igueldohotelb.com.ar

Hotel Rio, phone/fax 54 336 4424752, hotelrio@arnet.biz.com.ar, www.hotelrio.com.ar

Transport:

From Ezeiza airport (250 km) and Rosario (60 km): rent a car or contact Manuel Tienda León, e-mail reservas@mtlrosario.com.ar

Registration fee: US\$ 690

10% discount till May 30th, 2014. Cancellations before the deadline have 10% charge. After the deadline, there is no refunding but registration to another course. Change of attendants can be made until course start. If the course is postponed due to force majeure, the course organizers are not responsible for covering trip, hotel or other costs assumed by the attendant.

Registration includes course notes in black and white with the course slides; a DVD with the slides, plus papers/book chapters/videos for future reference, coffee breaks, lunches and certificate of approval or attendance.

Additional information and off line registration: Phone/fax 54 336 442 1318; e-mail cursos@metallon.com.ar

Registration Form

Full name: _____

Company: _____

Job title: _____

Address: _____

City: _____ Zip Code: _____

State: _____ Country: _____

Phone_: _____ Fax: _____

e-mail: _____

Payment

- Wire transfer: Ask for data to cursos@metallon.com.ar
- Check on the name of Jorge Madias; send to **metallon**, 9 de Julio 432, B2900HGJ San Nicolas, Buenos Aires, Argentina
- Cash: on-site, in the registration area