

SUMMER SCHOOL

ENVIRONMENTAL ASSISTED CRACKING

Save the date:



5-9 July 2026



Milazzo (ME), Italy



Brief overview

The “Environmental Assisted Cracking” summer school is organized in its first edition by the Italian Association for Metallurgy (AIM) in collaboration with the University of Bergamo, the University of Messina and the University of Manchester. The school will take place in Milazzo, a charming coastal town in north of Sicily, which offers stunning sea views, historic sites, and a vibrant local culture.

This international summer school offers a comprehensive understanding to environmentally assisted cracking (EAC) and related degradation phenomena. Through lectures by leading Italian and international experts, participants will explore fundamental mechanisms, characterization methods, and the behavior of traditional and advanced materials under combined mechanical and environmental stresses. The residential program is designed for doctoral students and academic or industry researchers and it includes opportunities for discussion and networking.

Description of the School

The term environmentally assisted cracking (EAC) refers to a group of mechanisms in which the combined action of a susceptible material, applied mechanical stress, and a specific environment leads to cracking, even when the stresses are below the material's typical fracture strength.

EAC typically includes phenomena such as stress corrosion cracking, hydrogen embrittlement, and corrosion fatigue. However, this summer school will also address other forms of mechanically induced damage – such as fretting and wear – as well as their combined effects, for example fretting–corrosion–fatigue.

EAC effects have been observed across a wide range of applications, including civil and industrial infrastructure, oil and gas, chemical processing, nuclear power, pipelines, aerospace, and biomedical components. Each of these fields is characterized by distinct environmental and stress conditions and involves different susceptible materials. This international summer school aims to provide doctoral students in corrosion science and engineering with an in-depth overview of the various forms of EAC, related investigation methods, the behavior of both traditional and innovative materials, and representative modeling approaches. The school is also open to researchers from industry who wish to deepen their understanding of these corrosion phenomena.

In the beautiful setting of Milazzo in Sicily, the residential program alternates lectures by Italian and international experts—both from academia and from research institutes and industry—with social events designed to encourage interaction and foster future collaboration among young researchers.

COURSE DIRECTORS

Marina Cabrini (Università di Bergamo)

Edoardo Proverbio (Università di Messina)

Fabio Scenini (University of Manchester)

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Sergio Lorenzi (Università di Bergamo)

Tomas Prosec (University of Prague)

Monica Santamaria (Università di Palermo)

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 **SUNDAY, 5 JULY 2026**
CASTELLO DI MILAZZO

APERITIF WITH TEAM BUILDING

- 15:00 Registration
- 16:00 Welcome to participants and introduction to the School
- 16:30 Meet the participants. Each participant will be able to present their activity/research
- Cocktail & Social time

 **MONDAY, 6 JULY 2026**
PALAZZO D'AMICO

- 09:00 Environmental assisted cracking mechanisms. Parkins Theory. Microstructure-stress/strain-environment
DIRK ENGELBERG
- 09:45 Short breathing break
- 10:00 Electrochemistry aspect in EAC: from slip dissolution to hydrogen electrochemical reduction reaction
DIRK ENGELBERG
- 10:45 Coffee break
- 11:15 Mechanism of hydrogen embrittlement: Hydrogen entry, transport and effect on crack growth in metals
TOMÁŠ PROŠEK
- 12:00 Greener future and safety of hydrogen gas infrastructure
MARINA CABRINI
- 12:30 Lunch
- 13:30 Principles of fracture mechanics and their application on EAC phenomena
FABIO SCENINI
- 14:45 EAC in the nuclear industry
FABIO SCENINI
- 16:00 Short breathing break
- 16:15 Low temperature SCC of stainless steel in chloride environment: What swimming pools, climbing rocks and containers for nuclear waste have in common?
TOMÁŠ PROŠEK
- 17:00 Differences between chloride induced SCC under atmospheric and immersed conditions
ANTHONY COOK



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Organising Secretariat



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Via Filippo Turati 8
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tel. +39 0276021132
tel. +39 0276397770
e-mail: training@aimnet.it
www.aimnet.it



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TUESDAY, 7 JULY 2026 PALAZZO D'AMICO

- 09:00 HAC Modelling: approaches and limits
EDOARDO PROVERBIO
- 10:15 Coffee break
- 10:45 Study of the failure of a prosthetic component (Co-Cr-Mo alloy) also due to fatigue phenomena
LORENZO FEDRIZZI
- 11:30 EAC in oil & gas industries
FABIO BOLZONI
- 12:15 EAC of on-shore and off-shore pipelines
MARINA CABRINI
- 13:00 Lunch
- 14:00 EAC in Building and civil engineering
FABIO BOLZONI
- 15:00 Stress Corrosion Cracking and Corrosion Fatigue of aluminum alloys in commercial applications: Ships, Planes, Trains and other Applications
HENRY HOLROYD
- 15:45 Short breathing break
- 16:00 Liquid metal embrittlement of steel during hot-dip galvanizing
TIZIANO BELLEZZE
- 16:30 Failure of a cast duplex stainless steel valve in a petrochemical environment
Failure of an austenitic stainless steel tie rod and cable in a metallurgical plant
LORENZO FEDRIZZI
- 20:00 Social dinner

WEDNESDAY, 8 JULY 2026 PALAZZO D'AMICO

- 08:30 Environmentally assisted fatigue
LUIGI DI VITO
- 09:30 EAC initiation and early crack growth under mechanical driving forces below the thresholds levels obtained from conventional testing
HENRY HOLROYD
- 10:00 Coffee break
- 10:30 Linear elastic and elasto-plastic fracture mechanics tests. Non-standardized full-scale tests
LUIGI DI VITO
- 11:15 Monitoring EAC by Acoustic Emission and Electrochemical Noise techniques
EDOARDO PROVERBIO
- 12:30 Light lunch
- 14:00 Group Social Trip to the Aeolian Islands



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 **THURSDAY, 9 JULY 2026**
PALAZZO D'AMICO

08:30 Examination

10:00 Technical-educational Visit to
Raffineria di Milazzo S.C.p.A.
• Technical seminar
• Lunch
• Visit to the refinery

15:00 Compilation of satisfaction
Survey
Questions and answer
Round table
Thank You & Closing Remarks

16:00 End of the school



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General information

LOCATION

The Course will be held in Milazzo (ME) at Palazzo D'Amico, Via Marina Garibaldi 72.

REGISTRATION INFORMATION

The Summer School has a limited number of available places. **Registrations will open on March 10, 2026 and close on June 19, 2026 or as soon as the maximum number of participants will be reached.** Therefore, in case of interest, we strongly recommend registering as soon as possible.

The attendance to the Raffineria di Milazzo plant tour is subject to availability of seats. The Organising secretariat will confirm the possibility of attending the technical visit as soon as possible.

REGISTRATION FEES (PER PERSON)

AIM/EFC MEMBERS FEE: € 480,00* (revenue stamp included)
NON MEMBERS FEE: € 580,00* (revenue stamp included)

Registration fee includes exclusively admittance to the Summer School, lunches, coffee breaks, social programme and plant tour.

NON members fee include AIM membership for the second half of 2026 and the whole 2027. **AIM JUNIOR MEMBERS** are required to pay the registration fee.

ACCOMPANYING PERSON

€ 130 (22% VAT included)

The fee includes the social programme.

PAYMENT AND REMITTANCE

· by bank transfer, to the order of Associazione Italiana di Metallurgia - AIM at "CREDITO EMILIANO SpA", Branch no. 052 Milano - Via Andegari, 14 - 20121 Milano - Italy, account no. 010000480455 - cod. ABI 03032- CAB 01600- - cin M IBAN: IT33M0303201600010000480455,

swift code BACRIT22MIL. The transfer order must specify the name of the participant and the reference "Summer School EAC 2026". A copy of the transfer order must be sent to AIM, together with the Registration Form.

· by credit card online: www.aimnet.it

ACCOMMODATION

Participants are responsible for their own booking and accommodation costs.

The summer school venue is in the city centre, within walking distance of the recommended hotels, where participants may benefit from reduced rates for early bookings. Please use the reservation code during the booking process (even if booking by email, form, or phone): EAC2026

The recommended hotels are: ([MAP VIEW](#))

- Hotel Garibaldi, available for booking at: www.hotelgaribaldi.net/
- Hotel Il Principe, available for booking at: www.hotelilprincipemilazzo.com/
- Hotel Eolian Milazzo, available for booking: www.eolianmilazzohotel.it/

RAFFINERIA DI MILAZZO PLANT TOUR

Attendance to the technical visit will be reserved to Summer School registered attendees and will be available for a limited number of people.

In order to be considered for an invitation, delegates should apply early while registering to the Conference and must receive an approval to participate from AIM Secretariat.

ECTS

The attendance to the School will provide 3 ECTS.

LANGUAGE

The Summer School will be held in English.

CANCELLATION AND REFUND POLICY

A refund, less 20% deduction for administrative costs, will be issued for written cancellations received **by June 19, 2026**. For attendees who notify their cancellation after June 19, 2026 or will not attend the Summer School, a charge of 100% of the registration fee will be withheld and a copy of the documentation will be sent after the event.

INSURANCE

The Organising Secretariat cannot assume any responsibility for personal accident, loss or damage to the private property of participants and accompanying persons, which may either occur during or arise from the Summer School.

Participants should therefore take whatever steps they consider necessary as regards insurance.

Organising Secretariat



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Registration form

FILL ONLINE

Family name.....

First name.....

E-mail (correspondance).....

Telephone.....

Mobile phone.....

Dietary requirements (allergies, intolerance, particular diet, etc):.....

- AIM/EFC MEMBER** (€ 480 - revenue stamp included)
- NON MEMBER** (€ 580 - revenue stamp included)
- ACCOMPANYING PERSON** (€ 80 - VAT included)

name of the accompanying person:

TOTAL AMOUNT BEING PAID:

INVOICING DATA

Company/University.....

Fiscal address.....

Town/Zip Code.....

VAT and fiscal code (if different).....

Order ref. number (if requested on the invoice).....

PEC (only for italian societies).....

Cod. SDI (only for italian societies).....

PAYMENT

- By bank transfer
- By credit card online at www.aimnet.it

Registration fee's payment must be made before the beginning of the school.
Registration fees and data for payment are detailed in the general information.

Date

Signature

PRIVACY DISCLAIMER

By signing this registration form, you declare that you have read and accepted the privacy policy available on the website www.aimnet.it.

INFO PRIVACY POLICY

I, the undersigned, have read the privacy policy and agree to AIM processing my personal data in accordance with Articles 13/14 of EU Regulation No. 679/2016 of April 27, 2016 (GDPR).

Furthermore, I authorize AIM:

to include my name in the list of participants in the event:

- Yes**
- No**

sending invitations to events of interest, including through other metalworking associations around the world:

- Yes**
- No**

Organising secretariat



ASSOCIAZIONE ITALIANA DI METALLURGIA

Via Filippo Turati 8
20121 Milano
P.Iva 00825780158

Ref. Segreteria:

Giulia Ringressi

Ref. Amministrazione:

Valeria Chiaverri, Marco Molinaro

tel. +39 0276021132

tel. +39 0276397770

e-mail: training@aimnet.it

website: www.aimnet.it

