

INTERNATIONAL SOL-GEL SOCIETY
IX ISGS Summer School, Alghero, Italy

Instability

From liquid phases to materials
through metastable phenomena

24 - 26 September 2025



ISGS



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**Materials Science and
Nanotechnology
Laboratory**

IX Sol-Gel Summer School

INSTABILITY

From liquid phases to materials through metastable phenomena

24-26 September 2025

The *IX ISGS Summer School* focuses on the intriguing topic of instability in chemical and physical phenomena related to the sol-gel process. This versatile method for creating advanced materials involves kinetics that can lead to metastable chemical physical equilibria. These instabilities significantly affect material properties and performance, impacting processes such as gelation, phase separation, cracking, and phase transitions.

During this summer school, we will examine the physics and chemistry that drive the mechanisms behind these instabilities and their implications for synthesizing various sol-gel materials. Through a combination of lectures and interactive roundtables, participants will gain a deeper understanding of how instability influences the structure and functionality of materials derived from the sol-gel process. The ultimate goal of the school is to bridge theoretical concepts with practical applications, equipping attendees with the tools they need to navigate and control instability in materials obtained through a liquid phase.

PROGRAM

Tuesday 23/09/2025

19.30 – 21.00 **Welcome Aperitivo on the beach**

Wednesday 24/09/2025

09.00 – 12.00 Registration
09.00 – 09.30 Opening greetings and Course presentation
09.30 – 11.00 *The importance of being instable* (Plinio Innocenzi)

11.00 - 11.15 **COFFEE BREAK**

11.15 – 12.45 *Spinodal decomposition in sol-gel materials*
(Kazuki Nakanishi)

12.45 - 13.30 **LUNCH**
13.30 – 15.00 **BEACH BREAK**

15.00 – 16.30 *Stain effects for self-assembly* (Luca Malfatti)

16.30 – 16.45 **COFFEE BREAK**

16.45 – 18.15 *Instability of stress, surface morphology and wettability of sol-gel-derived simple oxide thin films* (Hiromitsu Kozuka)

18.15 – 19.15 **POSTER PRESENTATION**

20.00 **DINNER**

Thursday 25/09/2025

09.30 – 11.00 *Evaporation-induced Self-Assembly*
(Galo J. A. A. Soler-Illia)

11.00 – 11.15 **COFFEE BREAK**

11.15 – 12.45 *From a sol to a gel, a kinetically driven transition*
(Plinio Innocenzi)

12.45 - 13.30 **LUNCH**
13.30 – 15.00 **BEACH BREAK**

15.00 – 16.30	<i>From single component to complex aerogels</i> (Maria Francesca Casula)
16.30 – 17.30	<i>Self-assembly at zero gravity</i> (Plinio Innocenzi)
16.00 – 19.30	SOCIAL ACTIVITY
19.30 – 23.00	Typical Sardinian Banquet at Agriturismo

Friday 26/09/2025

9.30 – 11.00	<i>Wrinkling in hybrid films</i> (Masahide Takahashi)
11.00 – 11.15	COFFEE BREAK
11.15 – 12.45	<i>Cracking instability</i> (Marco Faustini)
12.45 – 14.00	LUNCH
14.00 – 15.00	<i>Finding stability from instability. Open science discussion</i> (All together)
15.00 – 16.30	Flash presentations from the participants
16.30 – 17.30	Awards and closing remarks

VENUE

The summer school will be held in the Porto Conte Ricerche research centre (<https://www.portocontericerche.it/>) sited in Porto Conte, Alghero (SS).

Alghero is directly connected by the Alghero Airport (AHO), just 15 minutes from the city center by car. A public transportation service is available at the airport.

LIST OF SPEAKERS

Maria Francesca Casula	(University of Cagliari and INSTM)
Marco Faustini	(Sorbonne University)
Plinio Innocenzi	(University of Sassari and INSTM)
Hiromitsu Kozuka	(Kansai University)
Luca Malfatti	(University of Sassari and INSTM)
Kazuki Nakanishi	(Nagoya University)
Galo J. A. A. Soler-Illia	(National University of General San Martín)
Masahide Takahashi	(Osaka Metropolitan University)

ORGANIZING COMMITTEE

Plinio Innocenzi, Luca Malfatti and Davide Carboni

ECTS CREDITS

3 ECTS credits will be given to the students attending the school.

REGISTRATION FEES (VAT INCLUDED)

Students (ISGS member): 400 €; (no ISGS member): 450 €

Academic and industrial (ISGS member): 450 €; (no ISGS member): 500 €

The registration fee includes lunches, coffee breaks, welcome party and gala dinner.

REGISTRATION

A pre-registration is required for securing the place by e-mailing directly to plinio@uniss.it and luca.malfatti@uniss.it

INFORMATION

Web: www.lmnt.uniss.it

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View from the science park of Porto Conte Ricerche



Sunset view from Alghero beach