

# Pasteur's Demonstration of Chirality in 1848

The Citation for Chemical Breakthrough Award  
of the Division of History of Chemistry of the  
American Chemical Society.

Ceremony and Dramatization of Pasteur's  
Award Winning Experiments  
at the École normale supérieure (Paris)

October 11, 2013

Photography and PowerPoint Presentation by Clotilde Policar

The Film of the Ceremony: <http://savoirs.ens.fr/expose.php?id=1487>

Note that the play was given in French

## Program

**13H30**     **Registration**

**14H00**     **Opening remarks**

Marc Mézard, *Director of the Ecole Normale Supérieure*

**14H15**     **Louis Pasteur and molecular dissymetry**

Joe Gal, *University of Colorado, ACS Division of the History of Chemistry*

**15H00**     **Louis Pasteur at ENS**

*Texts and Experiments of Louis Pasteur, in period costumes*

By the students from the *ENS predoctoral program in Chemistry*  
and Eric Ruf, *Sociétaire of the Comédie Française*

**16H30**     **Award presentation**

Joe Gal, *University of Colorado, ACS Division of the History of Chemistry*

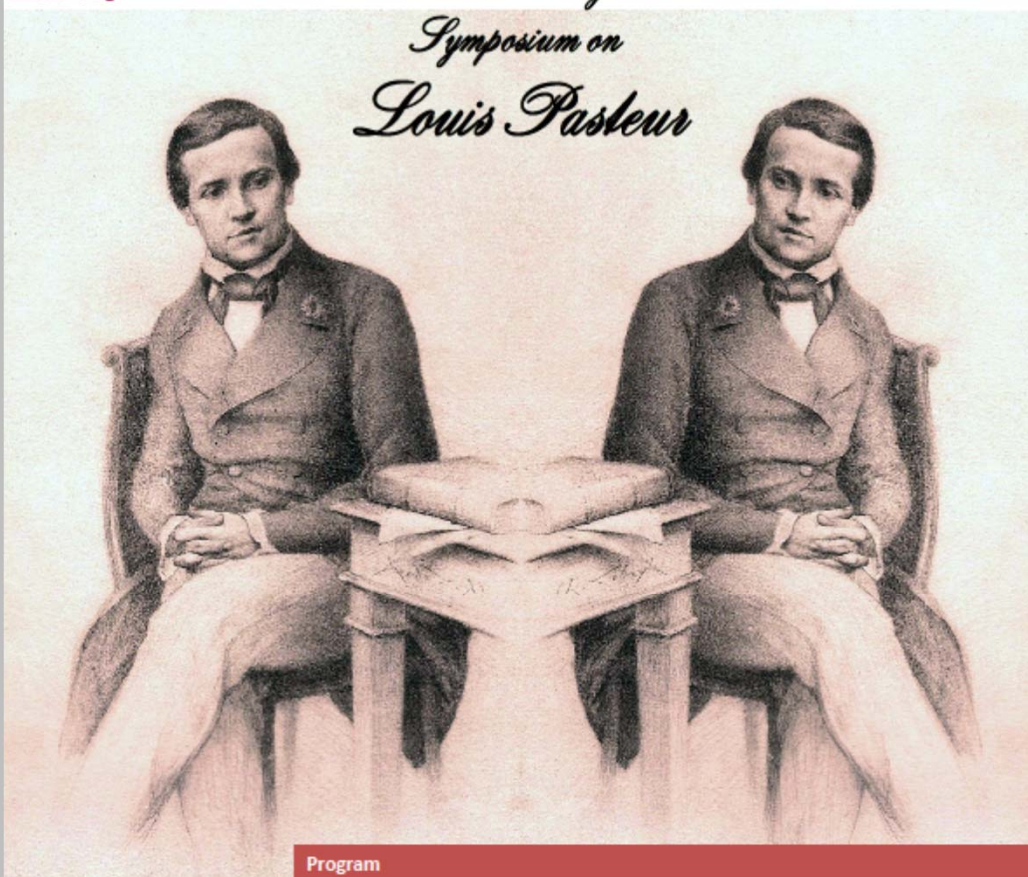
**16H40**     **Prize Acceptance Speech**

Ludovic Jullien, *Head of the Department of Chemistry*

**17H00**     **Jura cheese and wine buffet**



*Citation for  
Chemical Breakthrough Award  
Symposium on  
Louis Pasteur*



**Date:**  
Friday, 11 October 2013

**Location:**  
Salle des Actes  
Ecole Normale Supérieure  
45 rue d'Ulm  
75005 Paris, France

**Contact:**  
ludovic.jullien@ens.fr

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14H00	Opening remarks Marc Mézard, <i>Director of the Ecole Normale Supérieure</i>
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Division of the History of Chemistry  
American Chemical Society

## Citation for Chemical Breakthrough

Discovery of Molecular Chirality



Louis Pasteur, *Comptes rendus hebdomadaires  
des séances de l'Académie des Sciences,*  
1848, 26, 535 – 538.

### MÉMOIRES LUS.

CHEMIE. — *Mémoire sur la relation qui peut exister entre la forme  
cristalline et la composition chimique, et sur la cause de la polarisation  
rotatoire; par M. L. PASTEUR. (Extrait.)*

(Commissaires, MM. Biot, Regnault, Babinet, Balard.)

Le paratartrate de soude  
et d'ammoniaque dévie le plan de polarisation : seulement, parmi les cristaux  
provenant d'un même échantillon, il en est qui dévient le plan de polari-  
sation à gauche, d'autres à droite; et quand il y en a autant d'une espèce que  
de l'autre, la solution est inactive, les deux déviations contraires se com-  
pensent. Voici maintenant la différence cristallographique de ces deux es-  
pèces de cristaux. Ils sont tous hémyédriques; mais il y en a qui sont hémyè-  
dres à droite, d'autres à gauche, et la déviation dépend, pour le sens, de  
cette dissymétrie. Quand je veux une déviation à droite, je choisis les cris-  
taux hémyèdres à gauche; quand je veux une déviation à gauche, je choisis  
les cristaux hémyèdres à droite. Il m'est arrivé aussi de n'avoir pas de dévia-  
tion; c'est que j'avais pris des cristaux mêlés, sans faire aucun choix. N'est-il  
pas évident maintenant que la propriété que possèdent certaines molécules  
de dévier le plan de polarisation a pour cause immédiate, ou du moins est  
liée de la manière la plus étroite à la dissymétrie de ces molécules?

Presented to the École normale supérieure, Paris, France  
2012

The  
Citation for Chemical  
Breakthrough Award  
of the  
Division of the  
History of Chemistry  
of the  
American Chemical Society,  
presented to  
the École normale  
supérieure, to honor  
Pasteur's experiments  
at the ENS.  
October 11, 2013





## Conference and Award Presentation: the Audience

In the front row, from left to right,  
Christian Amatore speaking with Joseph Gal and Henri Kagan looking at the camera.





An introduction by Marc Mézard,  
Director of the Ecole Normale Supérieure



Ludovic Jullien,  
Head of the  
Chemistry Department



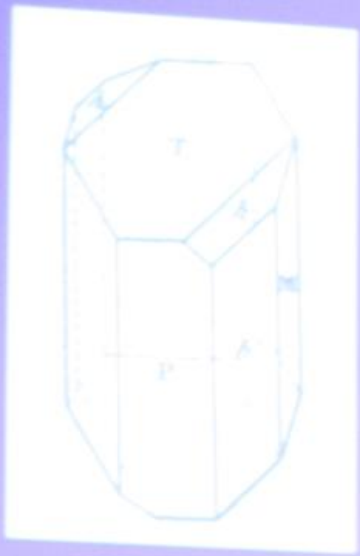


A conference lecture by Professor Joseph Gal, Departments of Medicine and Pathology, School of Medicine, University of Colorado Denver and representative of the Division of History of Chemistry of the American Chemical Society. Gal is an expert in the research and career of Pasteur.





A conference presentation by Professor Joseph Gal on Pasteur.



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A conference presentation by Professor Joseph Gal on Pasteur.



*Quand Pasteur était chimiste* — 2013 performance

*When Pasteur was a Chemist-2013,*  
a play written in the context of the *science history* lecture  
under the supervision of Ludovic Jullien, Laure Fort,  
Josée Brienne et Clotilde Policar

Performed by Eric Ruf, from the Comédie Française, as Pasteur

And the students: Lorien Benda, Pierre Canavelli, Nicolas Debons,  
Benoît Grosjean, Suzan Hmoud, Lucie Nurdin

**Rehearsal!**





Backstage: Rehearsal Before the Performance  
Eric Ruf at Work with Pierre Canavelli

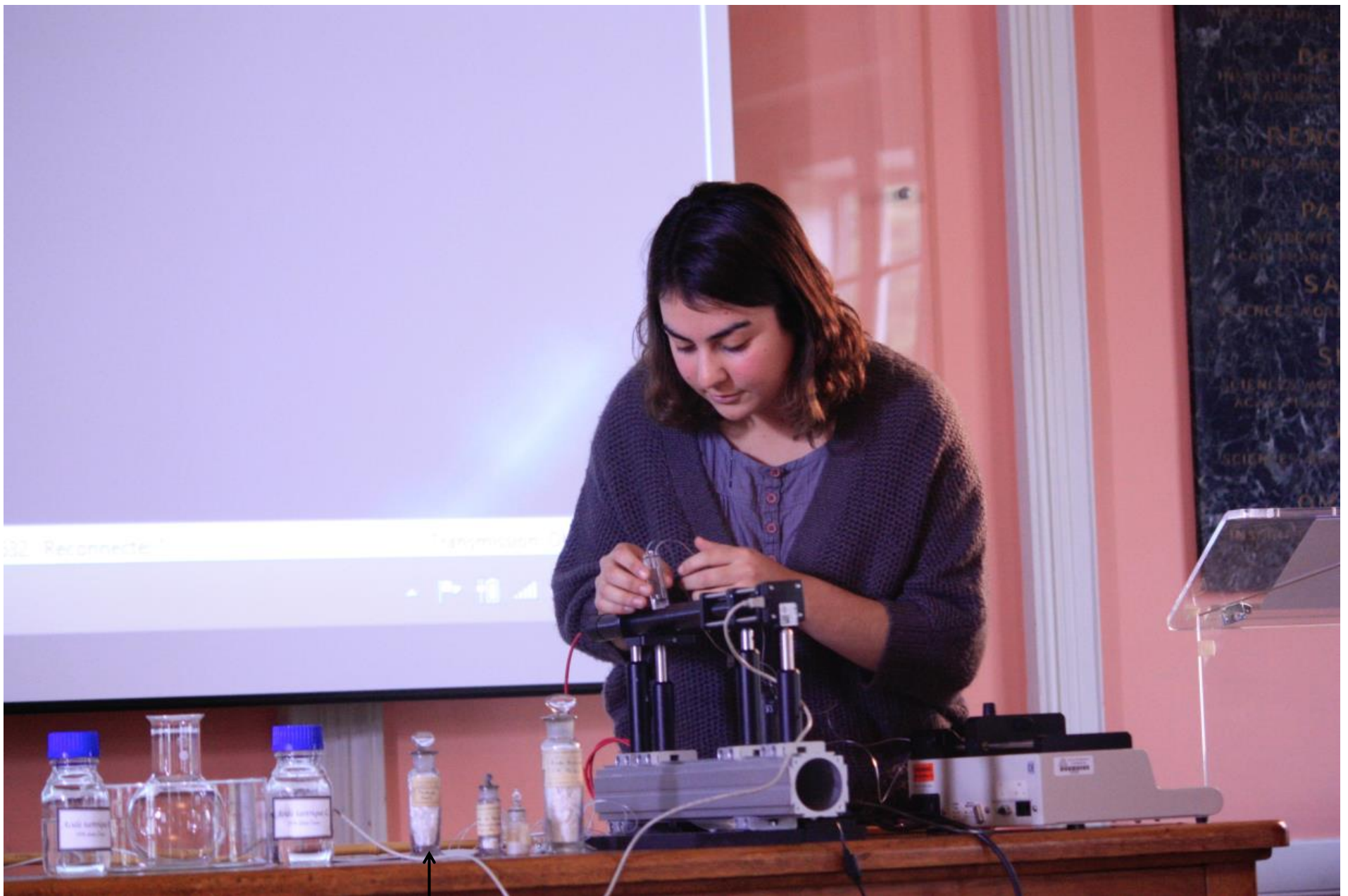


Backstage: Rehearsal Before the Performance  
Eric Ruf, Sociétaire de la Comédie Française, as Pasteur





Backstage: Rehearsal Before the Performance  
The Main Characters: Tartaric Acids (*Acides tartriques* in French)



**Backstage: Rehearsal Before the Performance**  
Suzan Hmoud setting up an experiment on the optical bench.  
At the left can be seen original samples from Pasteur.

The Performance!!!





Eric Ruf Reads Pasteur's 1860 Conferences  
When Pasteur Was a Chemist... 2013 performance

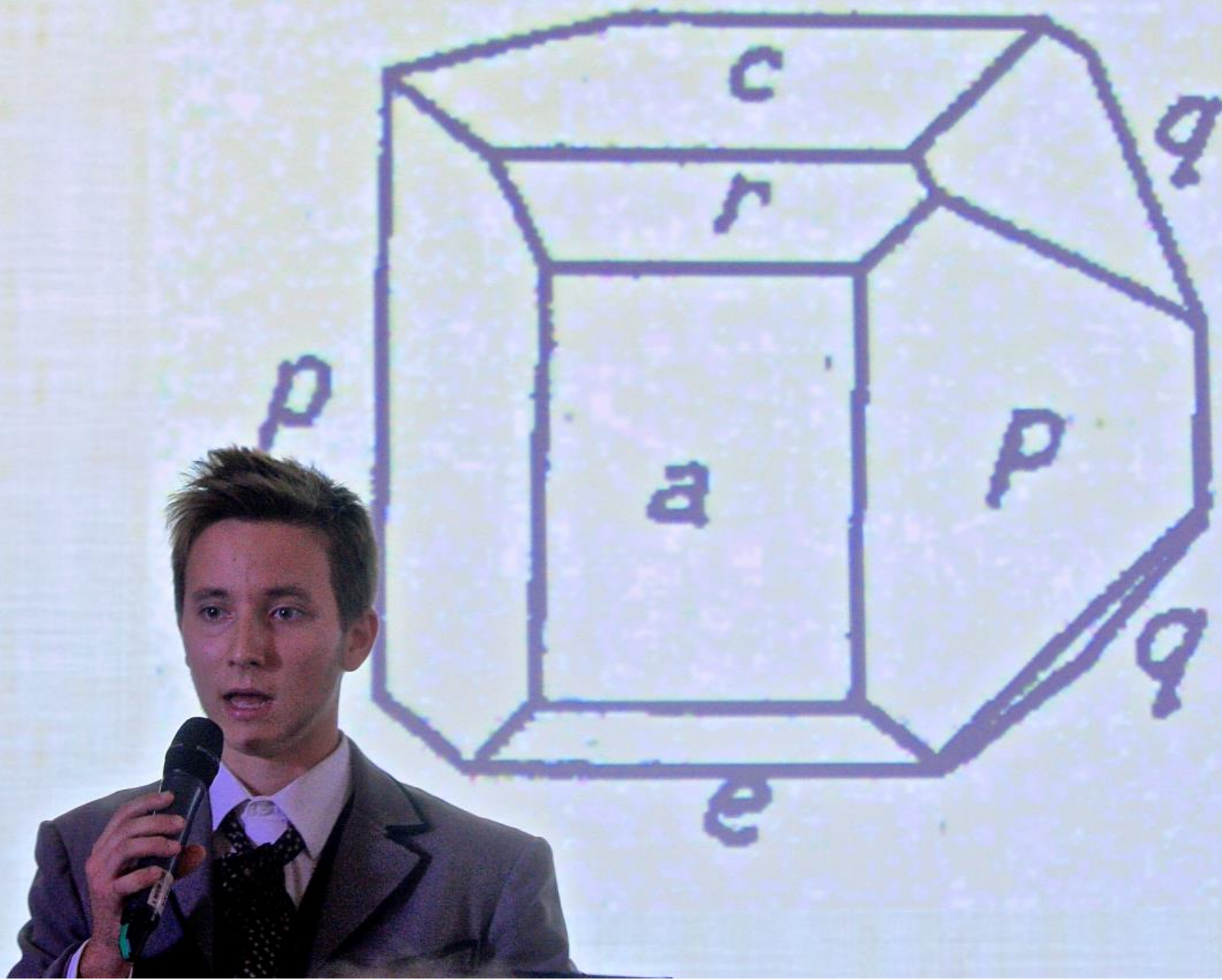


Eric Ruf Reads Pasteur's 1860 Conferences  
When Pasteur Was a Chemist... 2013 performance





Introduction by Nicolas Debons  
When Pasteur Was a Chemist... 2013 performance



Historical Introduction by Nicolas Debons  
When Pasteur Was a Chemist... 2013 performance





Historical Introduction by Nicolas Debons  
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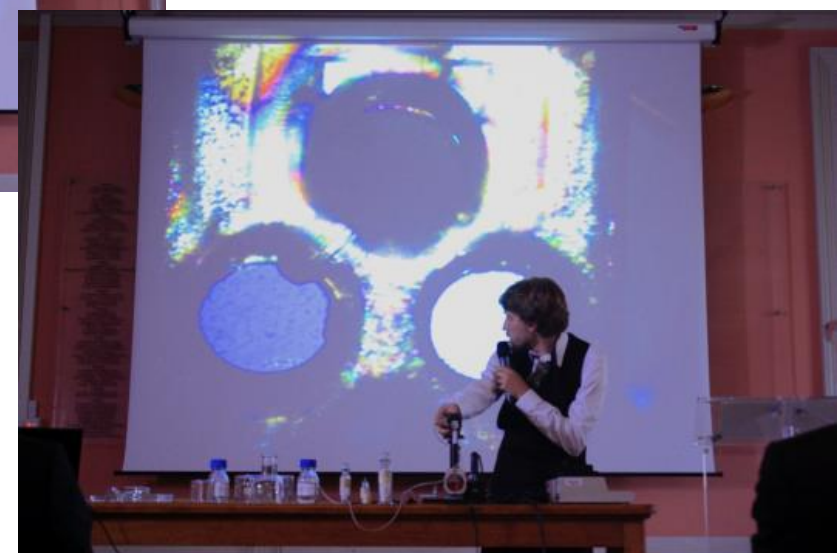
# Préparation du tartrate double de sodium et d'ammonium

Tartrate de sodium  
+  
Acide tartrique racémique (1eq)



Suzan Hmoud Explains the Experimental Protocol for Tartrates Crystallization  
When Pasteur Was a Chemist... 2013 performance





Benoît Grosjean Comments on the Optical Activity  
When Pasteur Was a Chemist... 2013 performance



Precipitation of the Mixture of D- and L-Tartaric Acid by Suzan Hmoud  
When Pasteur Was a Chemist... 2013 performance



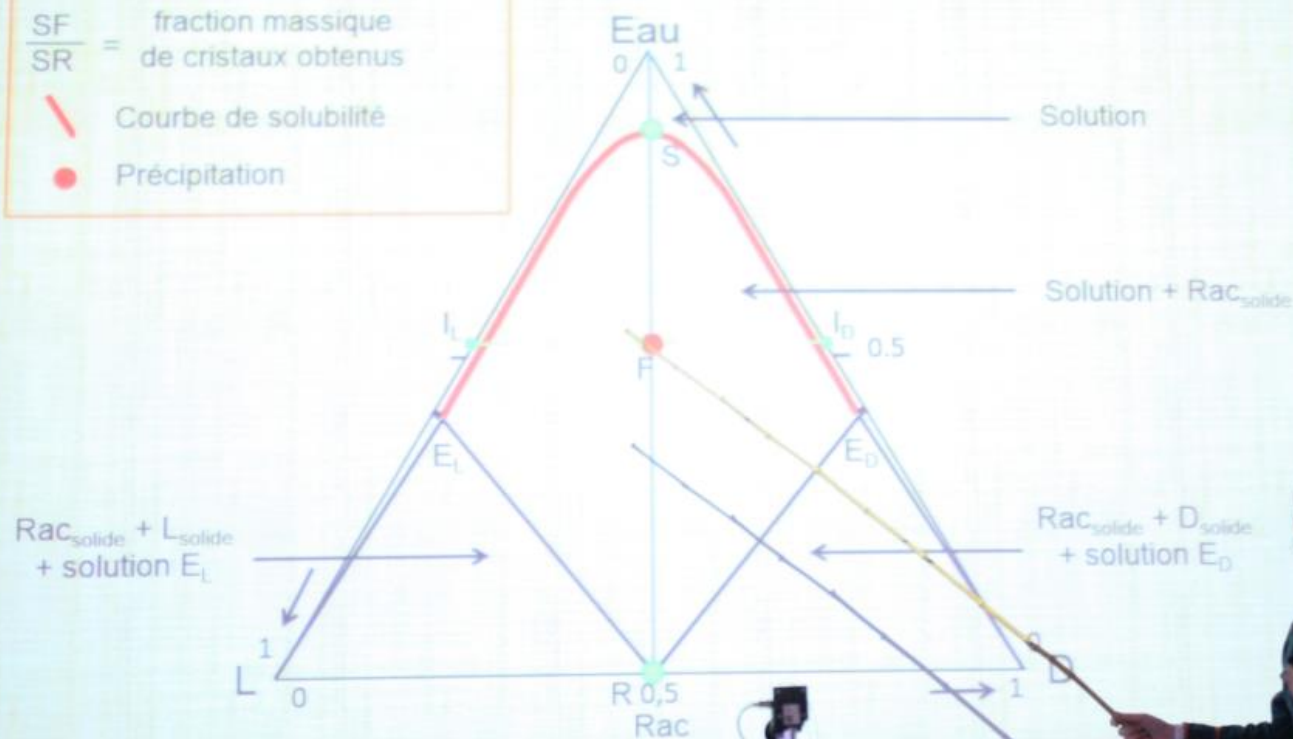
# Mélange des acides énantiomères

## Composé racémique

$\frac{SF}{SR}$  = fraction massique de cristaux obtenus

— Courbe de solubilité

● Précipitation



Lucie Nurdin Uses Phase Diagrams To Discuss Solubility of the Racemate When Pasteur Was a Chemist... 2013 performance



## Eric Ruf, as Pasteur

Pasteur tells us about his meeting with Biot, who says to him, grabbing his arm,  
« My dear child, I have loved science so much in my life that  
this experiment makes my heart throb.»

When Pasteur Was a Chemist... 2013 performance





Professor Joseph Gal of the Division of History of Chemistry of the American Chemical Society presenting the award plaque to Professor Ludovic Jullien.



Professor Jullien holding the award plaque with Professor Gal.

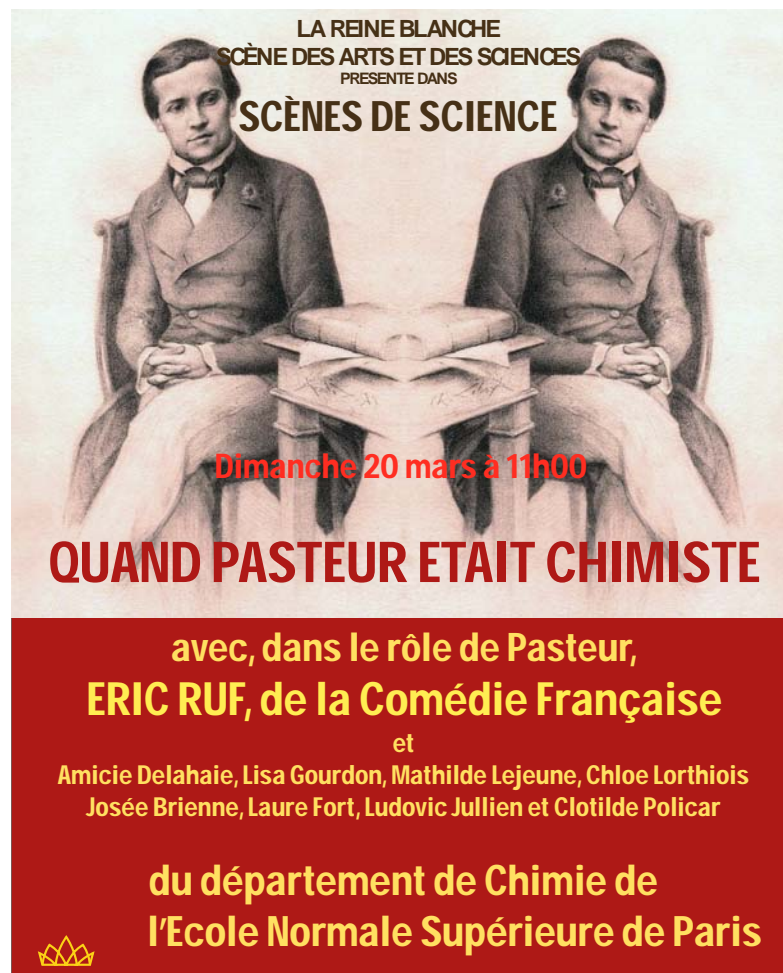


After the show,  
in front the  
Ecole Normale Supérieure.  
Pierre Canavelli, Nicolas  
Debons, Benoit Grosjean,  
Suzan Hmoud, and  
Lorien Benda.

Quand Pasteur était chimiste...  
2013 performance

[When Pasteur Was a Chemist... ]





Picture from an original drawing by Charles Lebayle (Pasteur in 1845), modified by Damien Baigl

A story to be continued...

A new and popularized version of the play was given at le Théâtre de la Reine Blanche in Paris on March 20th.

It will be given again on June 3<sup>rd</sup> at the Nuit Sciences et Lettres — ENS

Quand Pasteur était chimiste... Now a 2016 performance!