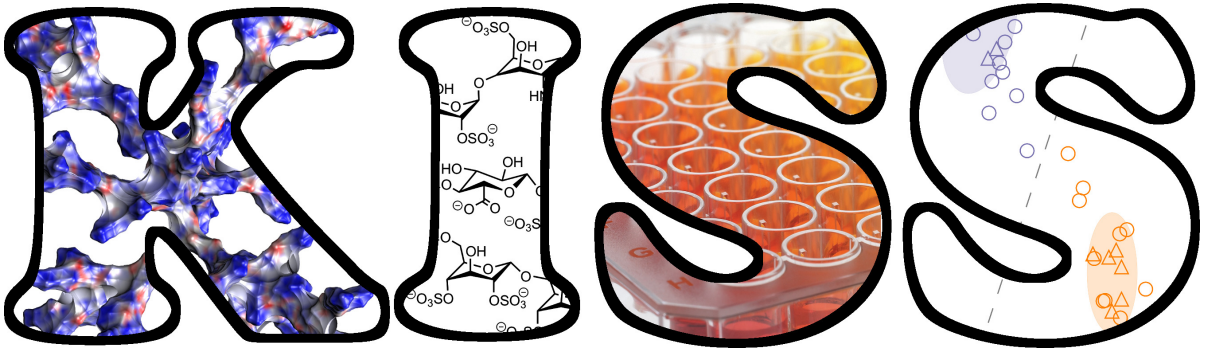
KISS (Keep It Simple, Sensor)



Jean-Patrick Francoia

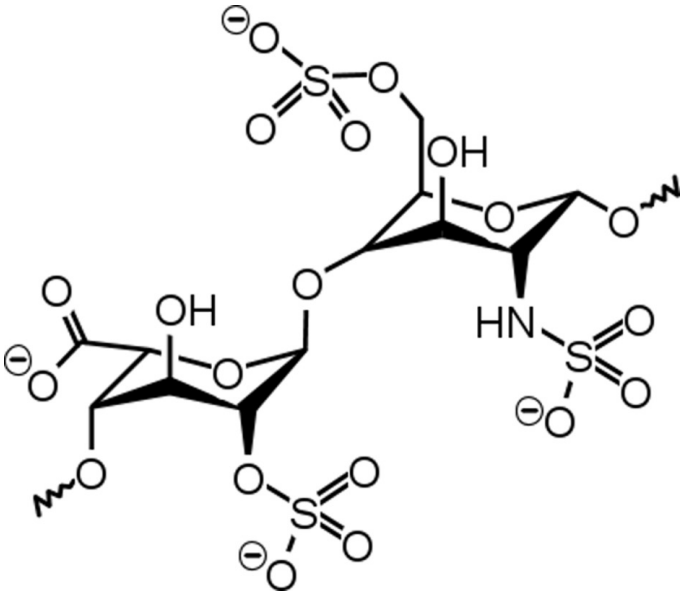
Laurent Vial

IBMM
Institut des
Biomolécules
Max Mousseron

cnrs

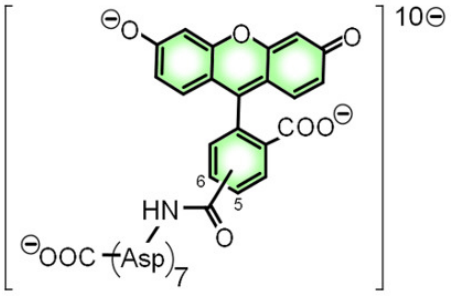
Université Montpellier

Monitoring heparin in complex media

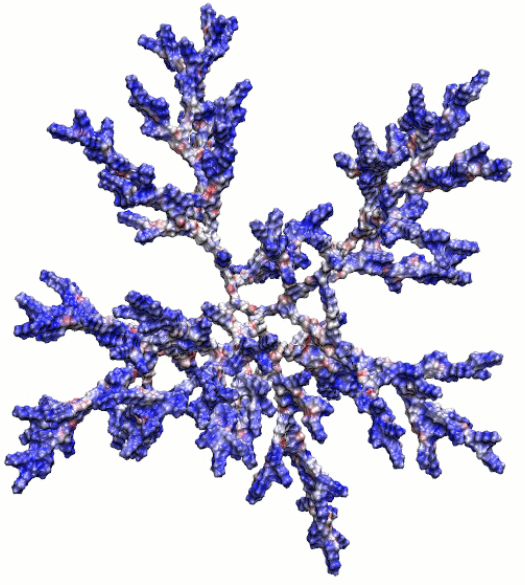


- Widely used as an anticoagulant
- One of the most highly charged polymer in biological fluids (> DNA)

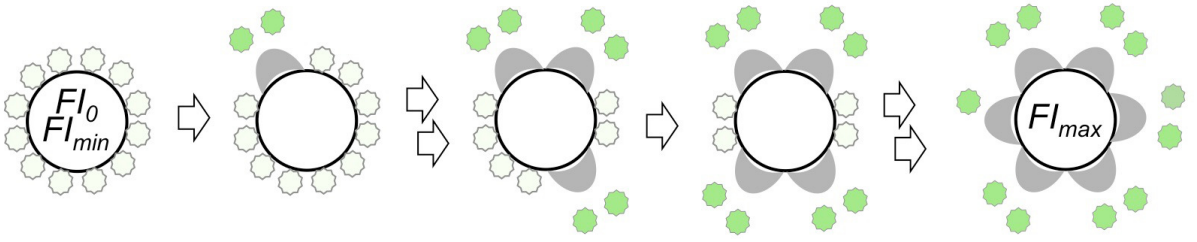
Indicator Displacement Assay



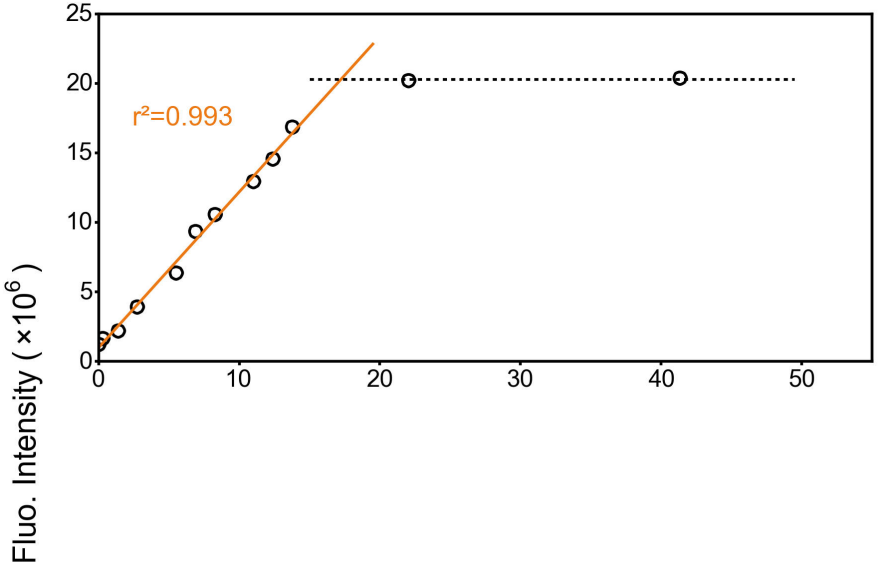
D7CF



DGL G4



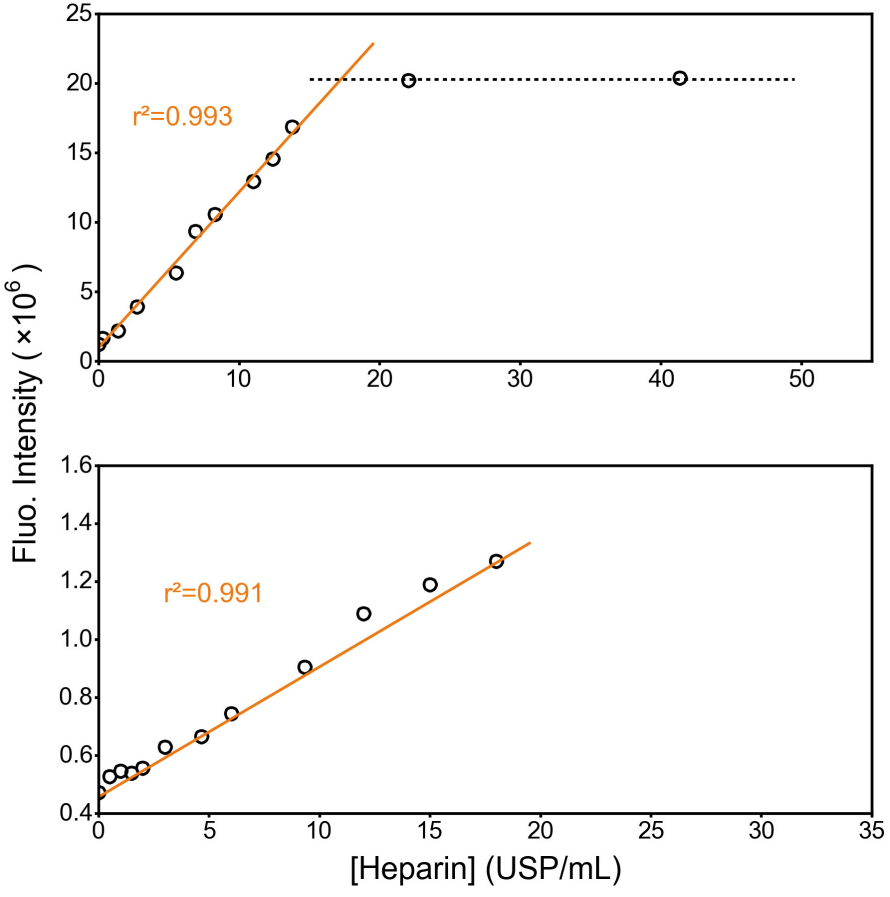
Heparin titrations



In HEPES buffer

J.-P. Francoia, R. Pascal and L. Vial, *Chem. Commun.*, 2015, **51**, 1953

Heparin titrations

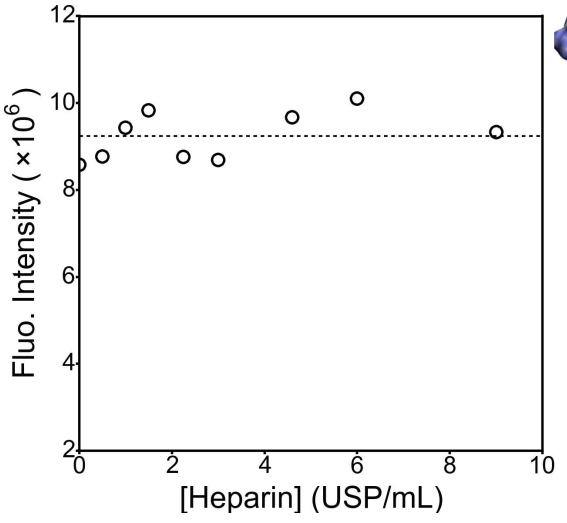


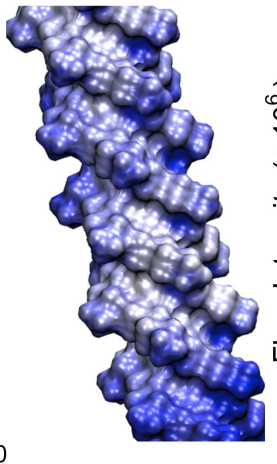
In HEPES buffer

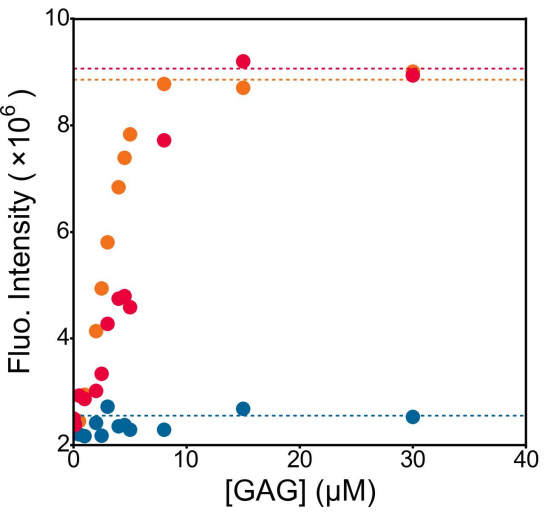
In human blood

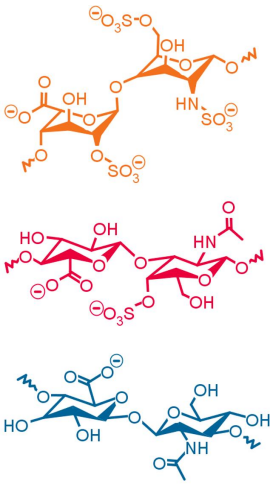
J.-P. Francoia, R. Pascal and L. Vial, *Chem. Commun.*, 2015, **51**, 1953

Control Experiments



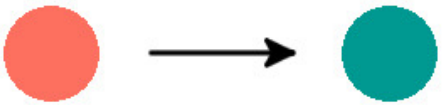




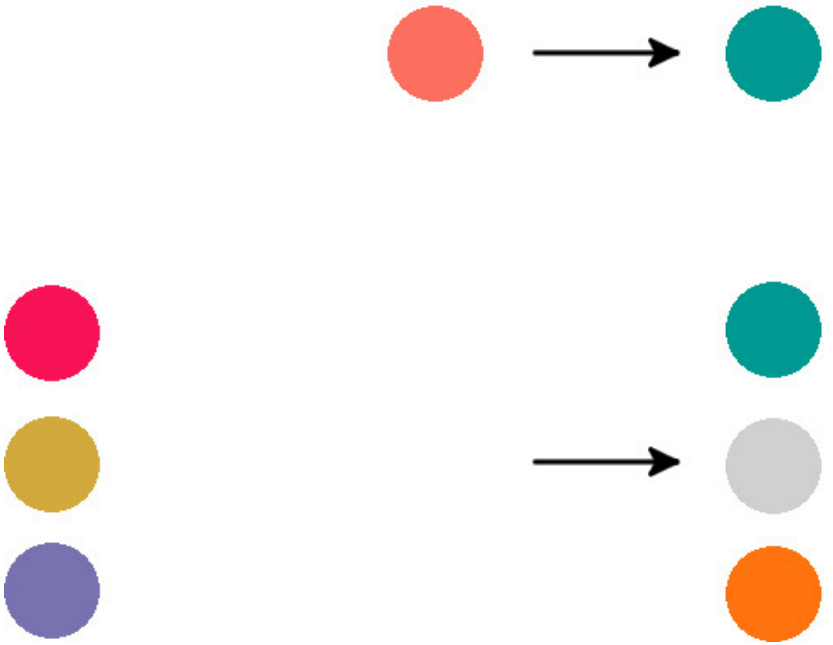


From top to bottom: heparin, chondroitin sulfate A, hyaluronic acid

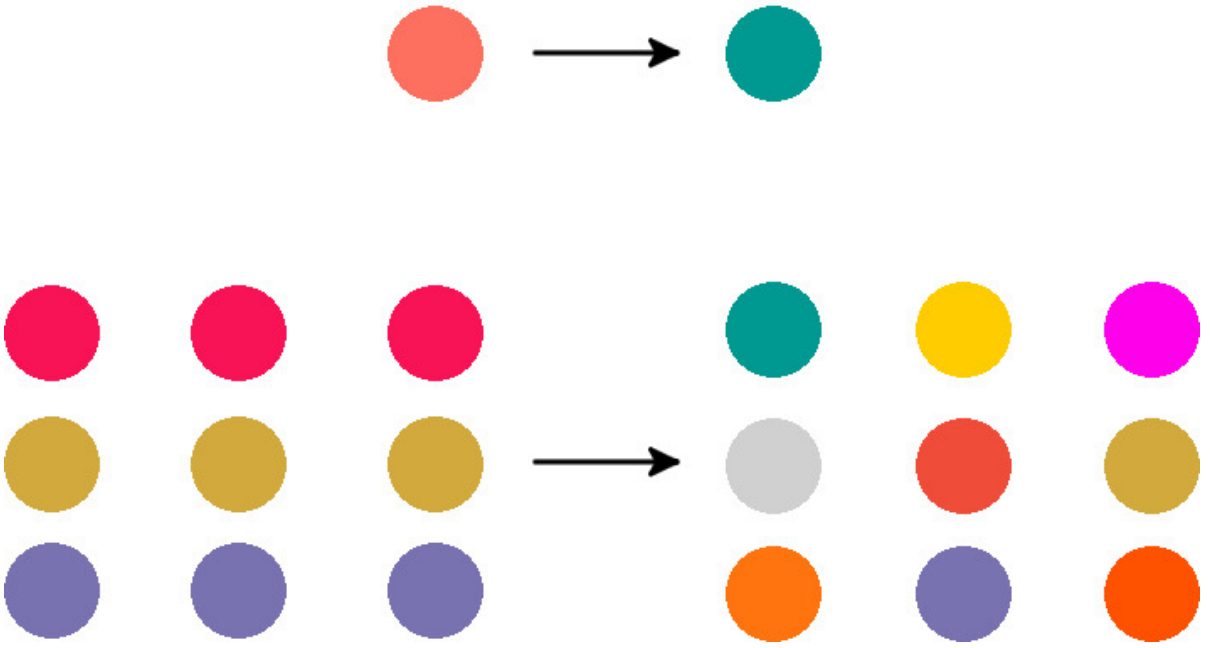
What is a sensor array ?



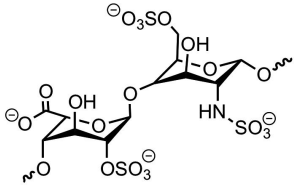
What is a sensor array ?



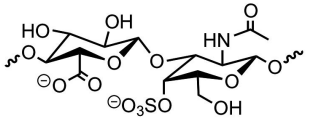
What is a sensor array ?



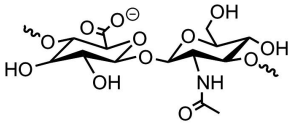
The players



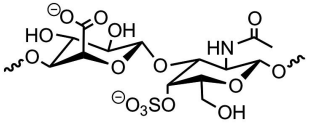
heparin



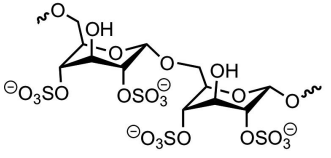
chondroitin sulfate A



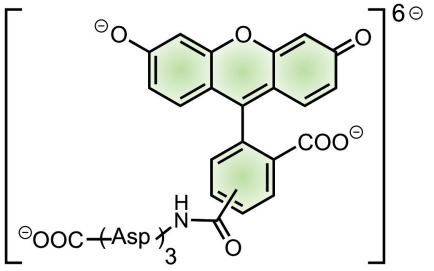
hyaluronic acid



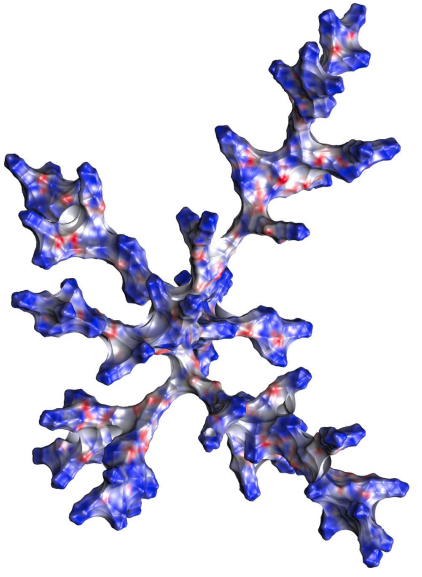
chondroitin sulfate B



dextran sulfate

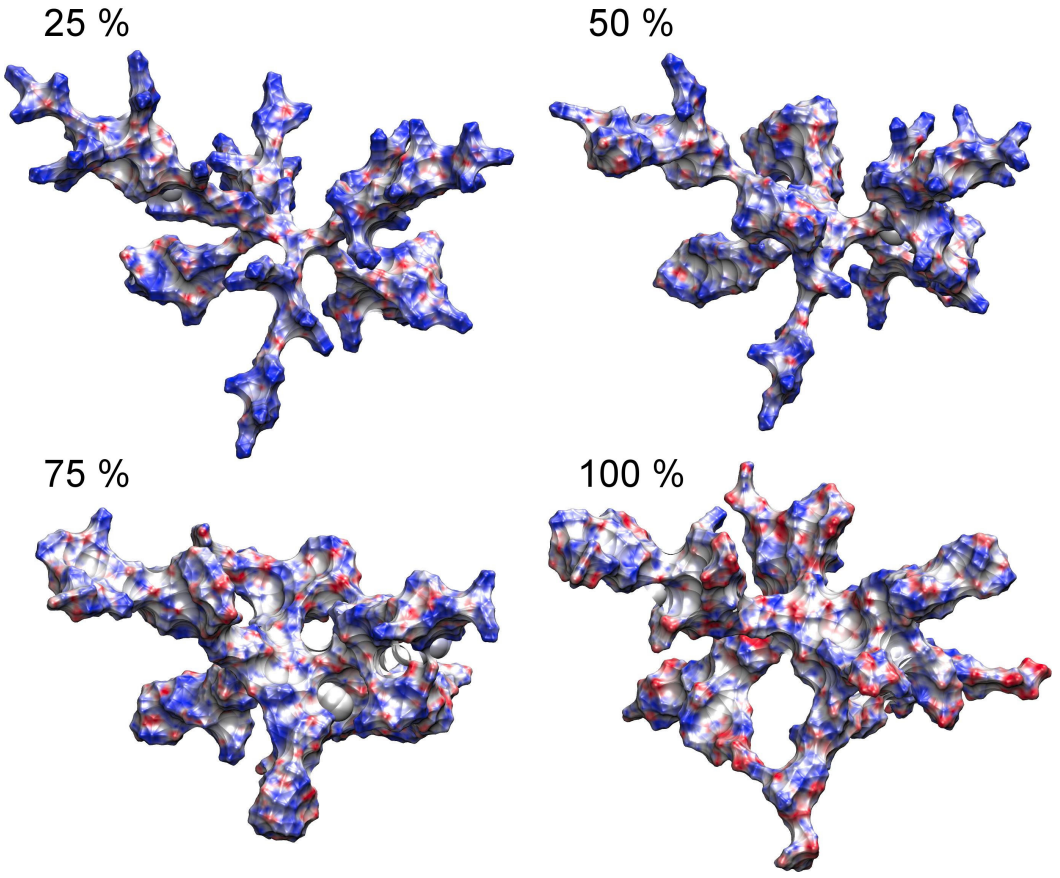


D3CF

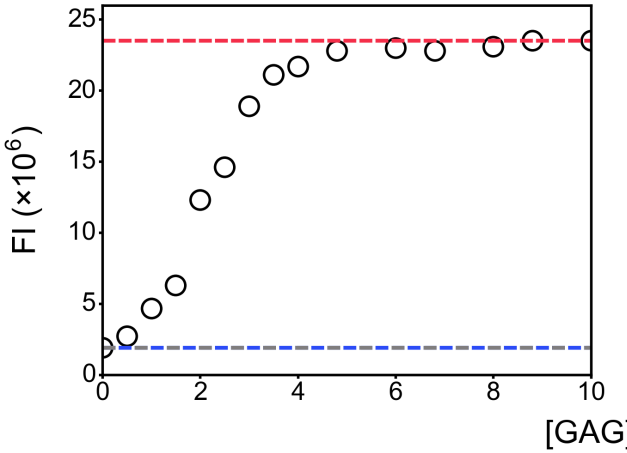


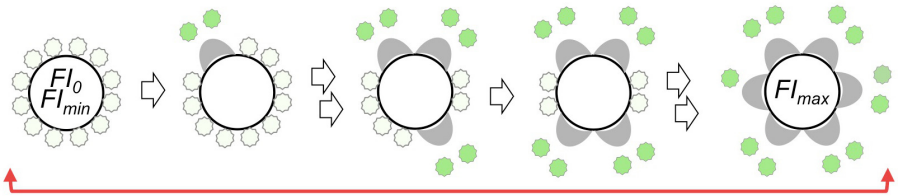
DGL G3

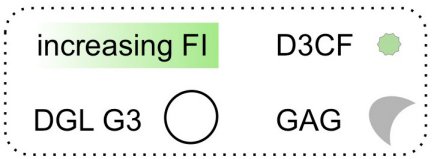
A differential array



Compaction/displacement-indicator assay



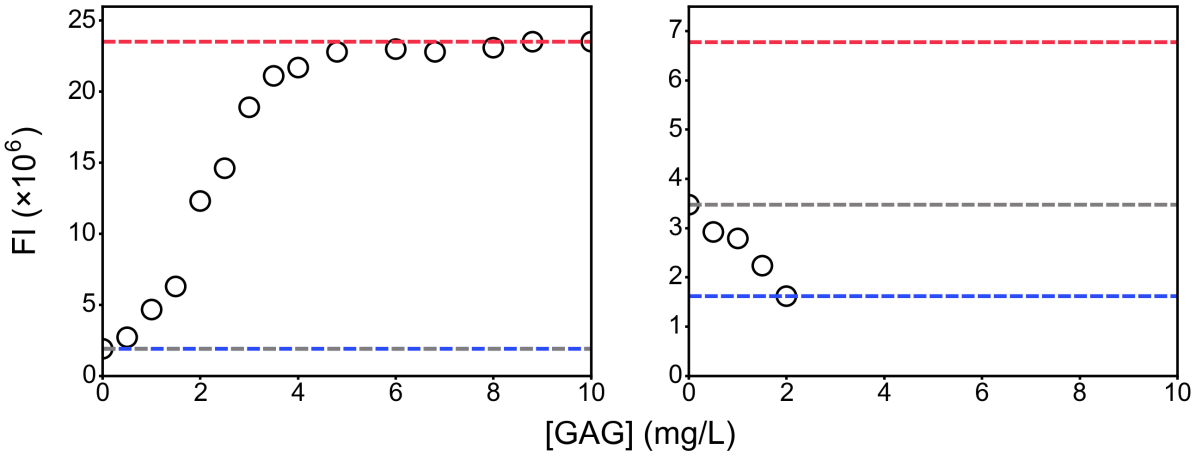


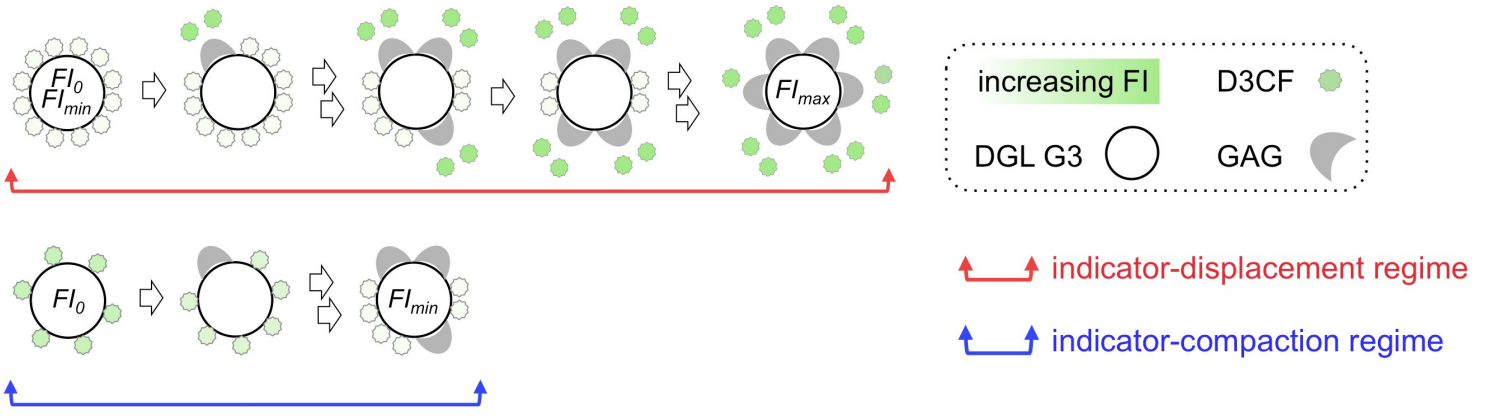


indicator-displacement regime

Left: 100% loading

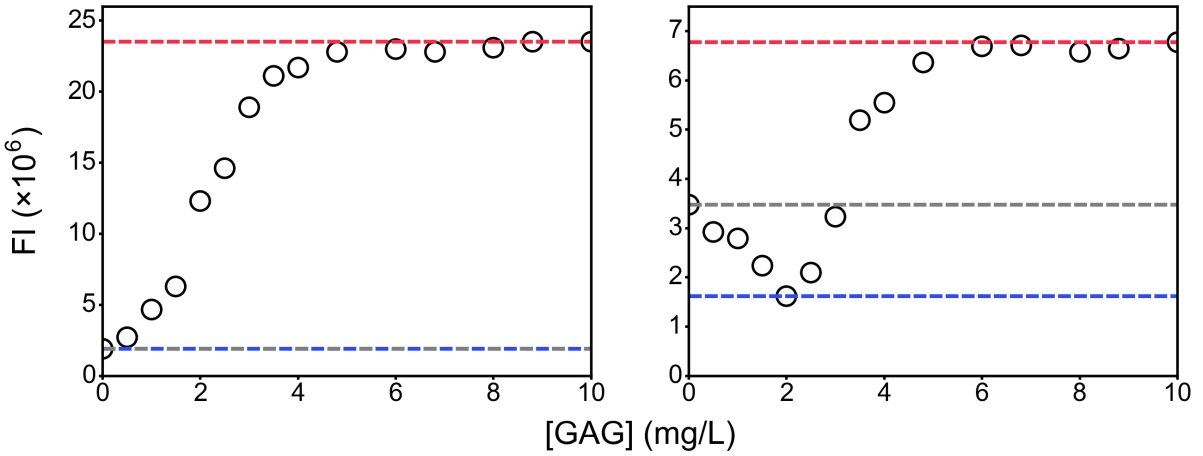
Compaction/displacement-indicator assay

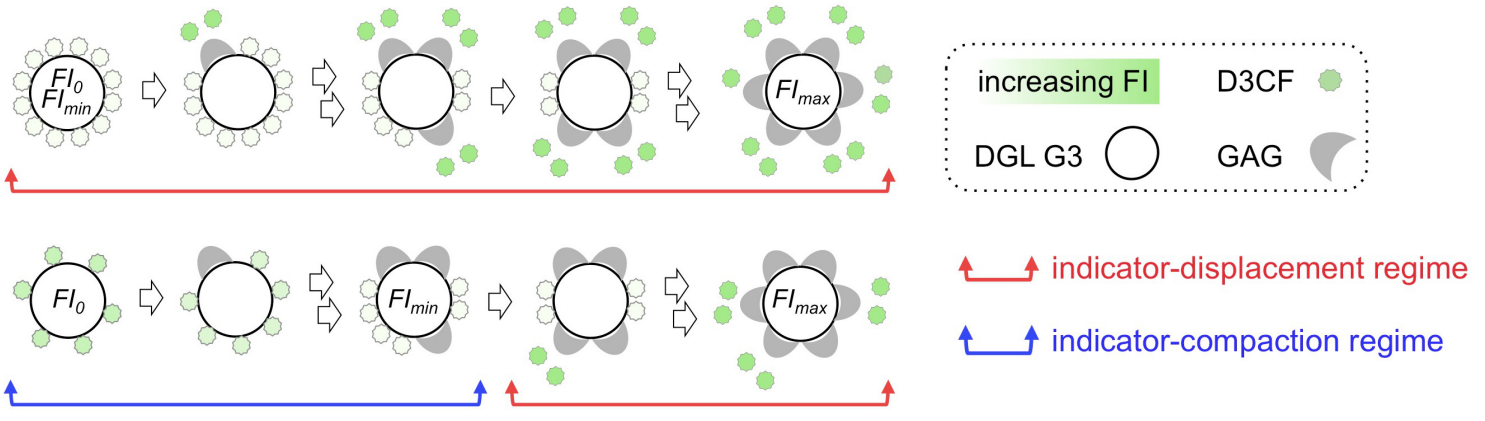




Left: 100% loading, *right*: 25% loading

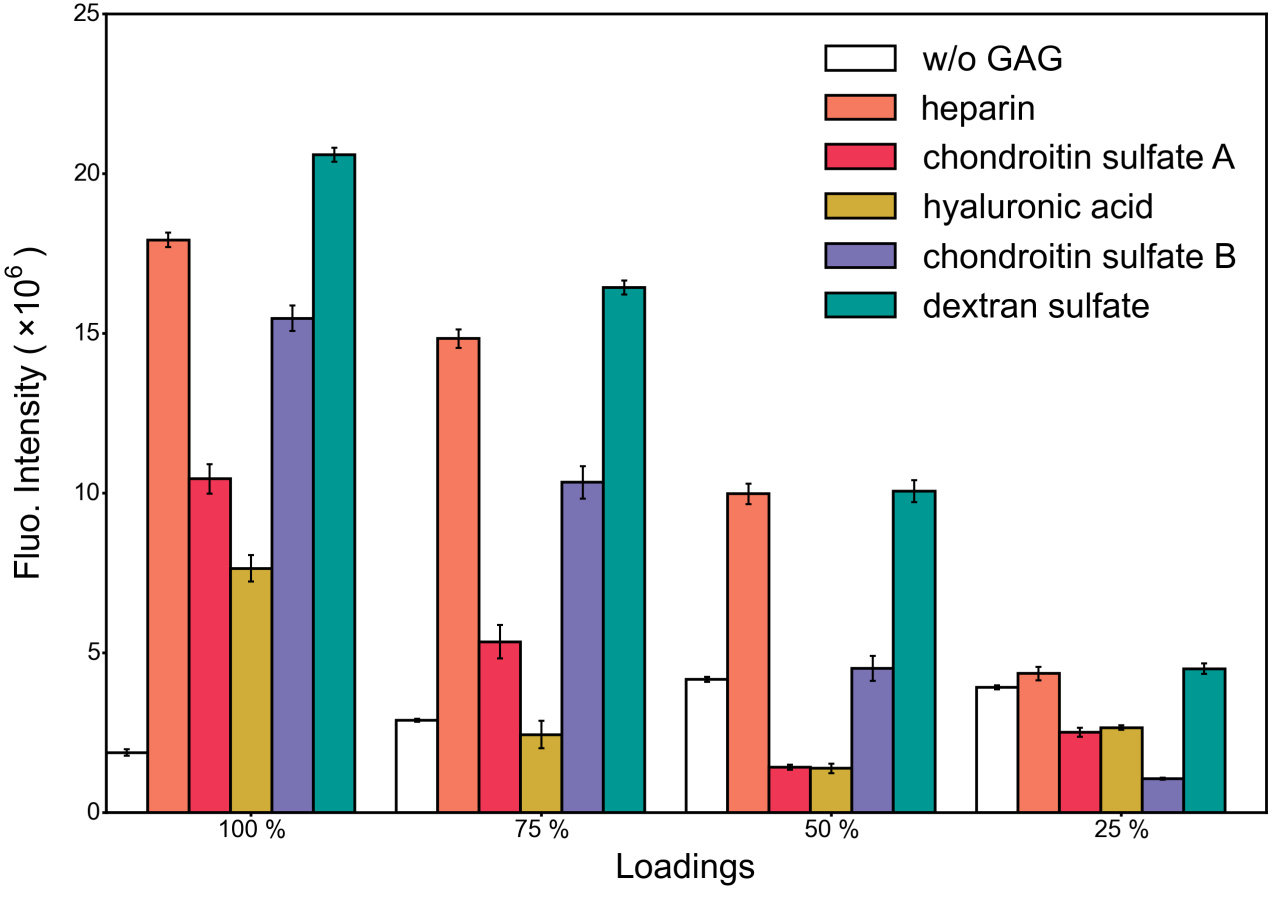
Compaction/displacement-indicator assay





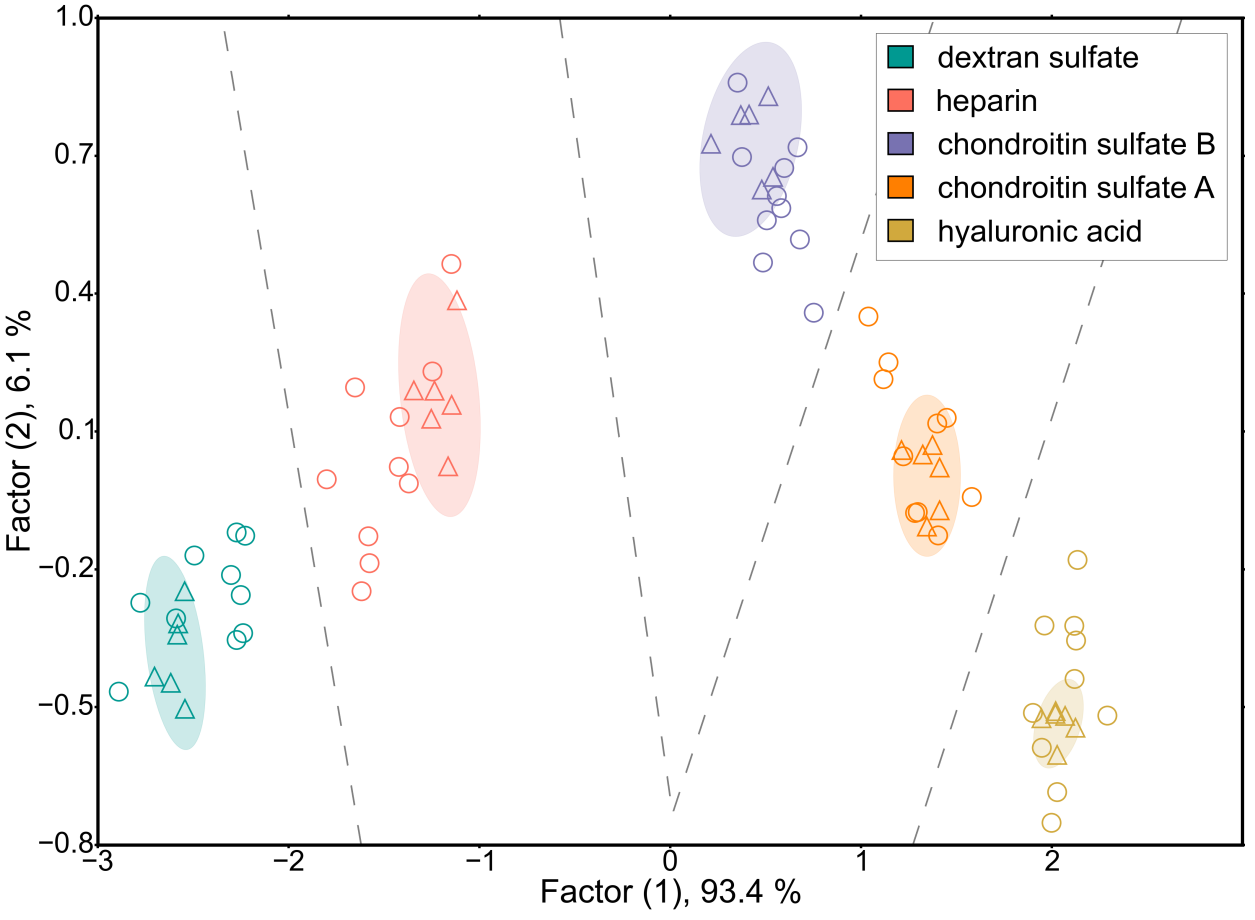
Left: 100% loading, *right*: 25% loading

The KISS array into action



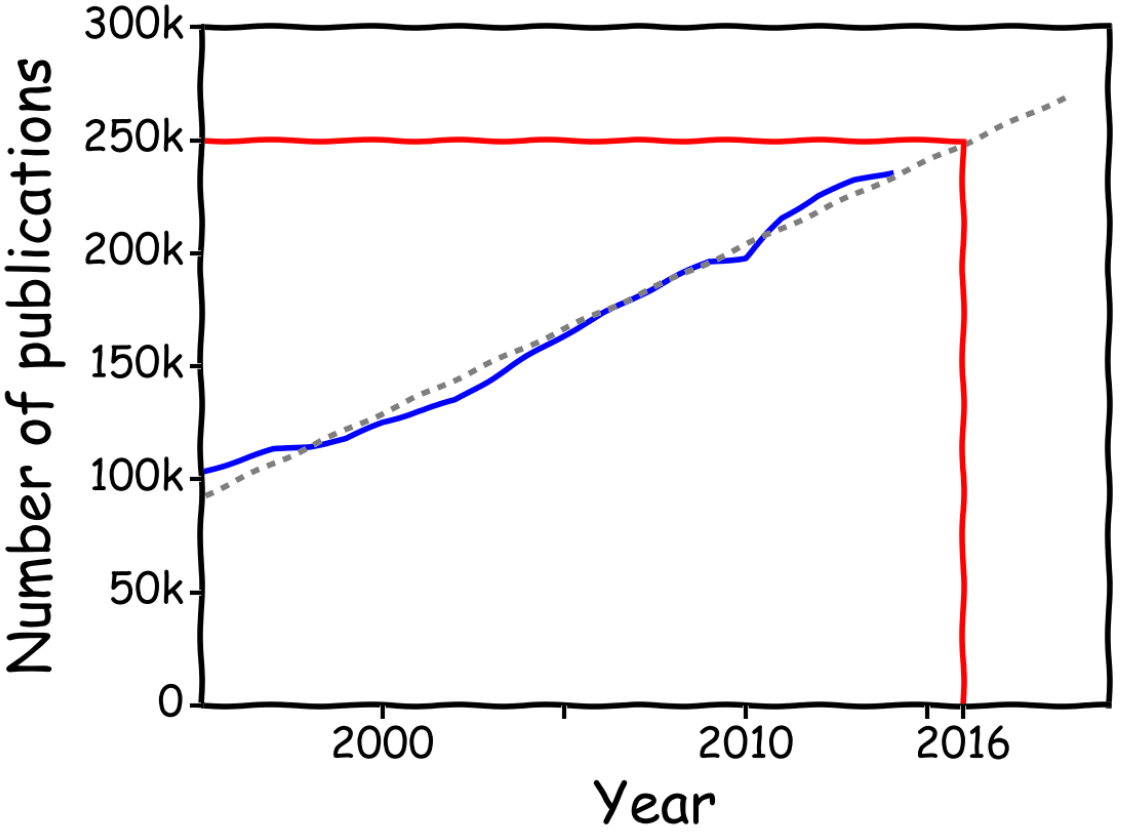
[GAG]=3.5 mg.mL^{-1}

Linear Discriminant Analysis



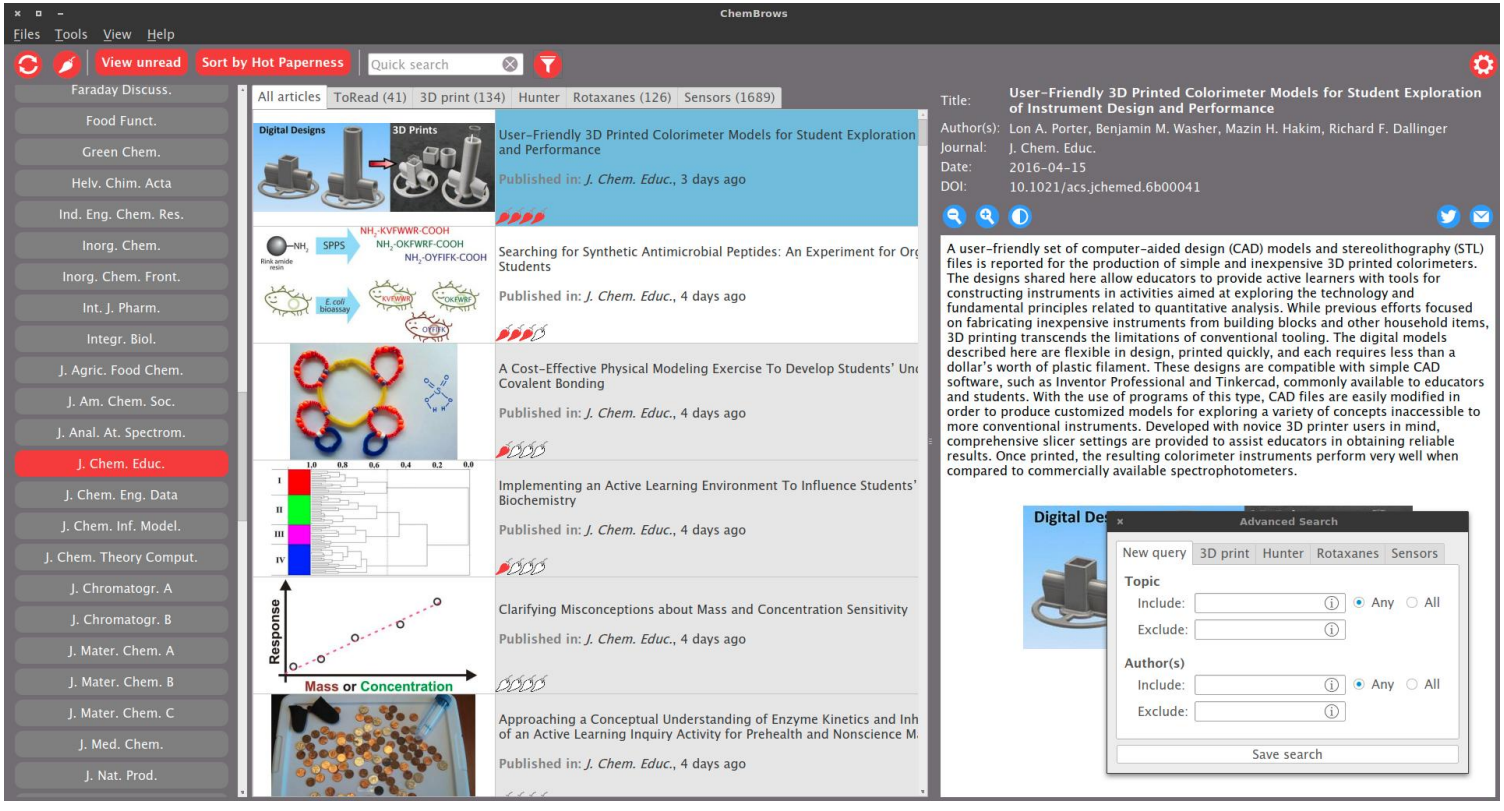
J.-P. Francoia and L. Vial, *Chem. Commun.*, 2015, **51**, 17544

Literature: a needle in a haystack



Source: Thompson Reuters Web Of Science

ChemBrows


ChemBrows
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View unread
Sort by Hot Paperness
Quick search
Faraday Discuss.
Food Funct.
Green Chem.
Helv. Chim. Acta
Ind. Eng. Chem. Res.
Inorg. Chem.
Inorg. Chem. Front.
Int. J. Pharm.
Integr. Biol.
J. Agric. Food Chem.
J. Am. Chem. Soc.
J. Anal. At. Spectrom.
J. Chem. Educ.
J. Chem. Eng. Data
J. Chem. Inf. Model.
J. Chem. Theory Comput.
J. Chromatogr. A
J. Chromatogr. B
J. Mater. Chem. A
J. Mater. Chem. B
J. Mater. Chem. C
J. Med. Chem.
J. Nat. Prod.
All articles
ToRead (41)
3D print (134)
Hunter
Rotaxanes (126)
Sensors (1689)
Digital Designs
3D Prints
User-Friendly 3D Printed Colorimeter Models for Student Exploration and Performance
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Approaching a Conceptual Understanding of Enzyme Kinetics and Inh of an Active Learning Inquiry Activity for Prehealth and Nonscience M
Published in: J. Chem. Educ., 4 days ago
Title: User-Friendly 3D Printed Colorimeter Models for Student Exploration of Instrument Design and Performance
Author(s): Lon A. Porter, Benjamin M. Washer, Mazin H. Hakim, Richard F. Dallinger
Journal: J. Chem. Educ.
Date: 2016-04-15
DOI: 10.1021/acs.jchemed.6b00041
A user-friendly set of computer-aided design (CAD) models and stereolithography (STL) files is reported for the production of simple and inexpensive 3D printed colorimeters. The designs shared here allow educators to provide active learners with tools for constructing instruments in activities aimed at exploring the technology and fundamental principles related to quantitative analysis. While previous efforts focused on fabricating inexpensive instruments from building blocks and other household items, 3D printing transcends the limitations of conventional tooling. The digital models described here are flexible in design, printed quickly, and each requires less than a dollar's worth of plastic filament. These designs are compatible with simple CAD software, such as Inventor Professional and Tinkercad, commonly available to educators and students. With the use of programs of this type, CAD files are easily modified in order to produce customized models for exploring a variety of concepts inaccessible to more conventional instruments. Developed with novice 3D printer users in mind, comprehensive slicer settings are provided to assist educators in obtaining reliable results. Once printed, the resulting colorimeter instruments perform very well when compared to commercially available spectrophotometers.
Advanced Search
New query
3D print
Hunter
Rotaxanes
Sensors
Topic
Include:
Exclude:
Any
All
Author(s)
Include:
Exclude:
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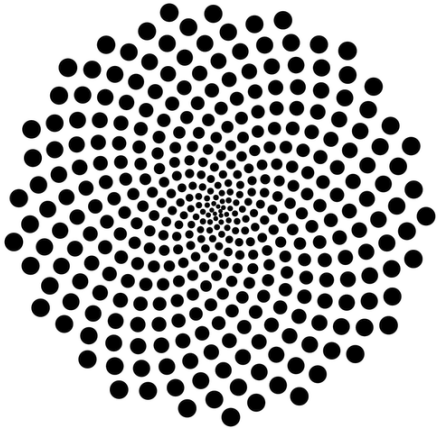
Twitter: @ChemBrows

Article: J.P. Francoia and L. Vial, *J. Chem. Educ.*, 2016, **93**, 1137



Poster: number **24**