



SciLifeLab
industry users:
>100 yearly

SciLifeLab user case: **Industry**

Drug development

High sensitivity and fast DNP-NMR technique to study drug polymorphism

As a result of a long-term collaboration between the SciLifeLab Swedish NMR (Nuclear magnetic resonance) centre and AstraZeneca, advanced Dynamic Nuclear Polarization (DNP) NMR is available for both academia and industry. The cutting-edge instrument is much faster than previous versions and can analyse samples in minutes rather than days, months or even years, and is vital for drug development.



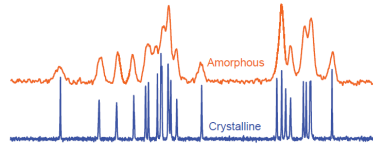
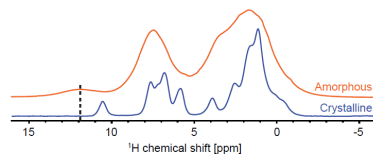
With DNP-NMR and computational methods including AI we can now solve the structures at the atomic level for organic molecules in any physical form, which is an amazing help in choosing the right structure from the start of development for clinical trials", says Staffan Schantz, Principal Scientist R&D, AstraZeneca.

When developing new drugs, it is important to produce the optimal crystal structure or solid form of the active drug, since this determines how fast the active component dissolves. One need to be able to control the form of the molecule for effective and safe late phase trials.

An unstable structure might make the drug work in the wrong way, become less effective or interact too fast or too slow. Most active substances possess polymorphism, which means they can form many types of different crystal structures. It is vital to select a stable variant with known properties that will not change during manufacturing, storage or once inside the body. The DNP-NMR method is superior to other techniques in solving different structures from powders, i.e. without access to large single crystals.



Curious to learn more? Access full case text through the QR code!



Cordova et al., *Nature Comm.*, 12 (2021) 2964.

Machine park at Swedish NMR Centre Gothenburg.

SciLifeLab infrastructure related to the case

Swedish NMR Centre comprises two nodes, in Gothenburg and Umeå, with complementary competences. The Gothenburg node has focus on structural biology and metabolomics studies on liquids, whereas Umeå contribute the same kind of measurements but focusing on the solid state. Both nodes have capacity for fragment-based screening.

SNC is part of the Swedish network SwedNMR, where Umeå and Gothenburg are two of the three access nodes (Stockholm being the third), in collaboration with four expert nodes (LU, LiU, SLU, UU).



“The DNP-NMR is a big investment, from both parties and this fruitful collaboration between AstraZeneca and SciLifeLab now makes this technique available to all Swedish researchers”, says Göran Karlsson, Director of Swedish NMR Centre (University of Gothenburg).

Swedish NMR Centre

The Swedish NMR Centre is a research infrastructure that provides access to state-of-the-art NMR instrumentation, methodology and expertise specifically within:

- Structural biology
- Metabolomics
- Chemical biology
- Small molecule DNP-NMR

Access and application

The Swedish NMR Centre provides service and access to state-of-the-art NMR equipment for academic research as well as industry on a national level. Project applications are continuously evaluated and approved projects are supported on various levels, from basic service to involved collaborations, depending on the user's needs. Welcome to apply for a project through our portal nmraccess.se.

Get in touch!

scilifelab.se/units/swedish-nmr-centre/

SciLifeLab constitutes more than 40 units across Sweden, offering multiple techniques in life science areas such as: Genomics, Proteomics, Metabolomics and exposomics, Spatial biology, Cellular and molecular imaging, Structural biology, Chemical biology and genome engineering, Drug discovery, Bioinformatics. Explore possibilities and find contacts for specific requests on scilifelab.se/services