

## Mads Bak – Curriculum Vitae, September 2000

Nationality: Danish.  
Date of Birth: September 12, 1969.

### Education and employment

Sep. 2000 – Nov. 2000 Assistant Professor, Lab. for Biomolecular NMR, Inst. for Molecular and Structural Biology, Aarhus University.  
Apr. 1997 – Jul. 2000 Ph.d., Lab. for Biomolecular NMR, Dep. Molecular and Structural Biology, Aarhus University.  
Graduate Teaching Assistant, Dep. Chemistry, Aarhus University. Defense Aug. 16, 2000.  
Sep. 1996 – May. 1997 Research Assistant, Lab. Protein Chemistry, Science Park, Aarhus.  
Sep. 1990 – Sep. 1996 M.Sc. in Chemistry and Physics, Aarhus University.  
Sep. 1988 – Aug. 1990 Sergeant, Nørrejske Artilleriregiment, Skive.  
Sep. 1985 – Jun. 1988 Gymnasium (~ high-school), Viborg Katedralskole.

### Computer programming experience

Author and maintainer of SIMPSON, a general simulation program for solid-state NMR (open-source software) located at <http://nmr.imsb.au.dk/simpson/>. First generally available version Aug. 1999.

C/C++ experience in an Unix/Linux environment 1994-2000 with focus on mathematical computations and modelling. In-depth knowledge of Perl, Tcl, HTML, Postscript, Unix development tools and system administration. Experience with TCP/IP sockets, Fortran, Pascal, Assembler, OpenGL, 3D graphics, and various X Windows widget sets.

### Presentations

**Posters** 40th Experimental Nuclear Magnetic Resonance Conference, February 1999, Orlando, Florida, *SIMPSON: A general NMR simulation package*.  
38th Experimental Nuclear Magnetic Resonance Conference, March 1997, Orlando, Florida, *REPULSION: A novel approach to efficient powder averaging in solid-state NMR*.  
**Speeches** 21'th Danish NMR meeting, Jan 2000, Karrebæksminde, *SIMPSON: A general simulation program for solid-state NMR*.  
19'th Danish NMR meeting, Cheminova, Jan 1998, *Solid-state NMR on membrane proteins (in danish)*.

### Dissertations

**Ph.d.** Dep. of Molecular and Structural Biology, Aarhus University, Jul. 1999. *Computational and experimental aspects of biomolecular solid-state NMR spectroscopy*.  
**M.Sc.** Dep. of Chemistry, Aarhus University, Sep. 1996. *Magnitudes and relative orientation of dipolar and chemical shielding tensors determined using homonuclear rotary resonance MAS NMR, and a novel method for efficient powder averaging*.

## Publications in refereed international journals

1. M. Bak, R. P. Bywater, M. Hohwy, J. K. Thomsen, K. Adelhorst, O. W. Sørensen, and N. C. Nielsen, *Orientation of the channel-forming peptide Alamethicin in planar phospholipid bilayers determined by  $^{15}\text{N}$  solid-state NMR*, Biophys. J., submitted September (2000)
2. M. Bak, E. S. Sørensen, L. K. Rasmussen, T. E. Petersen, and N. C. Nielsen, *Solid-state  $^{31}\text{P}$  NMR analysis of Casein Micelles*, J. Dairy Sci., submitted July (2000)
3. L. Odgaard, M. Bak, H. J. Jakobsen, and N. C. Nielsen,  *$^{13}\text{C}$  chemical shielding and  $^{13}\text{C}$ - $^{14}\text{N}$  dipolar coupling tensors in amino acids and peptides determined by natural abundance  $^{13}\text{C}$  rotary resonance NMR*, J. Magn. Reson., submitted April (2000)
4. M. Bak, J. T. Rasmussen, and N. C. Nielsen, *SIMPSON: A general simulation program for solid-state NMR*, J. Magn. Reson., in press August (2000)
5. M. Bak, J.K. Thomsen, H. J. Jakobsen, S. E. Petersen, T. E. Petersen, and N. C. Nielsen, *Solid-state  $^{13}\text{C}$  and  $^{31}\text{P}$  NMR analysis of urinary stones*, J. Urology **164**, 856-863 (2000)
6. M. Bak, M. D. Sørensen, E. S. Sørensen, L. K. Rasmussen, O. W. Sørensen, T. E. Petersen, and N. C. Nielsen, *The structure of the membrane-binding 38 C-terminal residues from bovine PP3 determined by liquid- and solid-state NMR spectroscopy*, Eur. J. Biochem. **267**, 188-199 (2000)
7. S. Dusold, E. Klaus, A. Sebald, M. Bak and N. C. Nielsen, *Magnitudes and Relative Orientations of Chemical Shielding, Dipolar and J Coupling Tensors for Isolated  $^{31}\text{P}$ - $^{31}\text{P}$  Spin Pairs Determined by Iterative Fitting of  $^{31}\text{P}$  MAS NMR Spectra*, J. Am. Chem. Soc. **119**, 7121 (1997)
8. M. Bak and N. C. Nielsen, *REPULSION, A novel approach to efficient powder averaging in solid-state NMR*, J. Magn. Reson. **125**, 132-139 (1997)
9. M. Bak and N. C. Nielsen, *Relative orientation of chemical shielding and dipolar coupling tensors: Mixed single- and double-quantum homonuclear rotary resonance nuclear magnetic resonance of rotating solids*, J. Chem. Phys. **106**, 7587-7599 (1997)