



THE UNIVERSITY OF
MELBOURNE

Faculty of Science School of Chemistry

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Separovic Research group page: <http://separovic.chemistry.unimelb.edu.au>



Profile:

- BA(Hons), Macquarie University, 1985
- PhD, University of New South Wales, 1992
- Experimental Scientist, CSIRO, 1984-1993
- Postdoctoral Fellow, National Institutes of Health, USA, 1994-1995
- Senior Research Scientist, CSIRO, 1993-1995
- Associate Professor and Reader, University of Melbourne, 1996-2005
- Professor, University of Melbourne, 2005-2019
- Associate Dean International, Faculty of Science, University of Melbourne, 2009-2011
- Head, School of Chemistry, University of Melbourne, 2010-2016
- Fellow, Australian Academy of Science, 2012
- Professor Emeritus & Professorial Fellow, University of Melbourne, 2019-

Areas of Interest:

- **Physical Chemistry**
 - biophysical chemistry
 - biological membrane systems
- **Biological and Medicinal Chemistry**
 - lipid-peptide interactions
 - antimicrobial and amyloid peptides
- **Spectroscopy and Molecular Characterisation**
 - biological solid-state NMR
 - structural biology

Research:

NMR and Structure of Membrane Peptides

NMR spectroscopy, complemented by a range of biophysical techniques, is being used to determine the structure and dynamics of membrane polypeptides to determine their mechanism of activity. Currently our main focus is the structure and interactions of amyloid peptides from Alzheimer's disease, pore-forming toxins and antibiotic peptides in model biological membranes. The results of our research provide insights into the biophysical chemistry of membrane-active peptides and proteins relevant to disease states and their possible treatments.

Solid-state NMR experiments are used for the structural determination of molecular systems that do not lend themselves to solution-state NMR and crystallographic methods, including crystalline powders and biological membranes. Our research focus is determination of the structure and dynamics of membrane components *in situ*. Using solid-state NMR, we have determined the molecular structure of membrane-active peptides within phospholipid membranes. Together with researchers from CSIRO, industry and other international laboratories, we study biological macromolecules with a range of pharmaceutical and industrial applications.

Publications

A list of my publications can be viewed at: <https://separovic.chemistry.unimelb.edu.au/#tab39>