

Celebrating Professor Len Lindoy's 80th Birthday

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Professor Leonard Francis Lindoy, FAA – known to everyone as Len – turned 80 in April this year. Although he formally retired in 2005, he has managed to publish a research paper nearly every month since then, so he has hardly disappeared into the academic sunset!

Len started as a school teacher while doing a part-time B.Sc. degree at the University of New South Wales (UNSW) in the early 1960s, but then completed an M.Sc. and a Ph.D. (also at UNSW) under the supervision of Stanley Livingstone. He then undertook two years of postdoctoral research at The Ohio State

University with Professor Daryle Busch. In 1970, Len was appointed as one of the initial chemistry staff members of the newly-formed James Cook University (JCU). His intention was to pursue the interest in macrocycles, but he also became active in the area of lanthanide shift reagents. Len became a leading international figure in macrocyclic chemistry, and his laboratory at JCU became a centre for the measurement of stability constants. Throughout his career, he worked closely with (the late) George Meehan, who contributed extensively to the synthetic aspects of projects. Despite the limitation in the



Jonathon Beves studied at The University of Sydney, obtaining Honours (2002) and Master's (2004) degrees under Len Lindoy's supervision. He moved to Basel (Switzerland) for his Ph.D. under the joint supervision of Ed Constable and Catherine Housecroft, followed by two years in Dave Leigh's lab in Edinburgh (UK) as a Swiss National Science Foundation Fellow. He was appointed to a faculty position at Nanjing University (China) in 2012, and maintains connections with several universities in China. In early 2013, he was appointed at the University of New South Wales.



Jack Clegg completed his Bachelor of Liberal Studies (Honours) and Ph.D. degrees at the University of Sydney with Len Lindoy, where he also studied history, German, and law. He then spent two years at the University of Cambridge on a Marie Curie Fellowship before joining the University of Queensland in 2012 where he is an associate professor and ARC Future Fellow. Jack won the 2015 Queensland Young Tall Poppy Science Award and was the 2016 University of Sydney Faculty of Science Young Alumnus of the Year.



Richard Keene gained his Ph.D. degree from the University of Adelaide and, after two postdoctoral appointments, was appointed in 1978 to James Cook University in Townsville ... and for 18 years (1978–1996) he and Len Lindoy were the 'inorganic staff' of the Chemistry Department. Richard retired as Distinguished Professor in 2012 and now holds an Honorary/Emeritus position at the University of Adelaide. He was a recipient of the Rennie Medal of the RACI, and a Fulbright Fellowship. Richard has published in a number of areas of coordination chemistry – including electron transfer, chirality in supramolecular chemistry, and the development of metal complexes as anticancer, antibacterial, and antiparasitic agents.



Yang Kim completed his Ph.D. degree in inorganic chemistry in 1989 at Yeoungnam University (South Korea) and joined Kosin University (South Korea) as a professor. He is currently an Honorary/Emeritus professor at Kosin University and a guest professor at Kumamoto University (Japan). He was involved in collaborative research nationally, and internationally with Professors Leonard F. Lindoy (University of Sydney), Jack M. Harrowfield (Université de Strasbourg), Peter Comba (Universität Heidelberg), Shinya Hayami (Kumamoto University), Keisuke Ohto (Saga University), and Pierre Thuéry (CEA, IRAMIS, CNRS). The principal themes of his current research activities involve supramolecular chemistry of organic and inorganic compounds; encapsulating ligands for the isolation, purification, analysis, and use of metal ions; and spin crossover materials.

number of local postgraduate students, Len pursued and expanded his research through active external collaborations.

Len's career thrived in Townsville, and he was the first person to be awarded a Personal Chair at JCU. He received a D.Sc. from the UNSW, and he was the recipient of the Burrows Medal of the RACI. He became the Chair of the Chemistry Panel for ARC, the President of the Australian Institute of Nuclear Science and Engineering, and a Fellow of the Australian Academy of Science (AAS) before he left JCU after 26 years and moved to The University of Sydney as the Chair of Inorganic Chemistry in 1996.

Len's career has had an enormous impact in macrocyclic chemistry and subsequently in cryptand and supramolecular chemistry. His publication list includes two books, several patents, and nearly 400 research papers. In addition to the prizes mentioned above, he has subsequently been awarded the David Craig Medal of the AAS, The Leighton Memorial Medal of the RACI, and a Centenary Medal of the Australian Government. In addition, he has several international guest professorships and received several honorary doctorates.

Len's activities have always been accompanied by his wife Fay, who has been – and is – a wonderful partner in this journey. Len has influenced generations of students, inspiring interest in both inorganic chemistry and supramolecular chemistry through enthusiasm and commitment to undergraduate and postgraduate education. He continues to receive invitations for invited lectures around the world, and delivers them too!

This special issue of the Journal includes articles from some of Len's many collaborators and friends from around Australia and the world. Len's international trips have often included stopovers in Korea, Germany, and the UK, and it is fitting that collaborators from each of these locations have also contributed to this issue.

Long-term collaborators from Dresden – Karsten Gloe, Kerstin Gloe, and Jan Weigand – report heterodinuclear complexes of hexadentate ligands.^[1] Peter Comba in Heidelberg, who has had a long association with Australian chemistry, reports on the oxidation of cobalt(II) bispidine complexes with dioxygen.^[2] Peter Tasker and his Edinburgh co-workers appropriately report on the solvent extraction properties of simple ligands – an area in which Peter has worked with Len for decades.^[3] Ed Constable and Catherine Housecroft in Basel, who have known Len since their postdoctoral time at Cambridge, report on the coordination behaviour of ferrocene-functionalised terpyridine ligands with predictable and unpredictable assembly algorithms.^[4]

Len has regularly visited Asia – in particular Korea, Japan, and more recently China. Shim Sung Lee (Korea) and co-workers report endocyclic and endo/exocyclic silver(I) complexes of thiaoxaza-macrocycles.^[5] Keisuke Ohto (Japan) and Yang Kim (Korea) describe the synthesis of a novel dibenzylamide derivative of *p*-tert-octylcalix[4]arene and its extraction properties towards noble metal ions.^[6] Yang Kim (Korea), with collaborators Shinya Hayami (Japan), Jack Harrowfield (Strasbourg), and others, present the crystal structure of a heterometallic luminophore – the Ru(II) complex of a ferrocenyl-terpyridine with a flexible linkage.^[7] 'Expat' Australian Jack Harrowfield also reports (with University of Western Australia crystallographers Brian Skelton and the late Allan White) studies into the interactions of the achiral hexamminecobalt(III) cation with *tris* (dipicolinato)lanthanate(III) anions.^[8] The Hayami group in Japan report molecular assemblies and spin-crossover behaviour of cobalt(II) complexes with terpyridine incorporating different nitrogen positions in pyridine rings^[9] and proton conductivity of graphene oxide on aging.^[10]

Many of Len's connections with China were established by a former postdoc (now at the CSIRO), Gang Wei. Three papers co-authored by Gang with collaborators are included in this issue: Minbo Lan reports an evaluation of methanol-induced free radicals in mice liver;^[11] Yuan Zeli reports on two new oxovanadium(IV) compounds containing amino acid Schiff base ligands;^[12] and Zhu Tao presents supramolecular assemblies of cucurbit[10]uril based on outer surface interactions.^[13]

Len's interest in supramolecular chemistry also crossed into coordination polymers and metal-organic frameworks (MOFs). J. J. Vittal (Singapore) contributes a report of interpenetrated double pillared-layer Co(II) MOFs.^[14] From the University of Adelaide, Christian Doonan and Chris Sumby report isoreticular 2D MOFs with inherent structural flexibility.^[15] Stuart Batten, Keith Murray, David Turner, and Glen Deacon at Monash University present transition metal thiocyanate complexes of picolylcyanoacetamides,^[16] and Suzanne Neville from Sydney brings us an investigation into the structure and magnetic properties of a series of two-dimensional iron(II) framework materials.^[17]

Peter Junk, currently Nevitt Professor of Chemistry at JCU where Len was based for the bulk of his career, reports on the synthesis and structures of rare earth 3-(4'-methylbenzoyl)-propanoate complexes and their properties as new corrosion inhibitors.^[18] Deanna D'Alessandro (Sydney), who undertook her Ph.D. at JCU with Richard Keene, presents findings of the in situ spectroelectrochemical investigation of ruthenium(II) complexes with bispyrazolyl methane triarylamine ligands.^[19] Roger Bishop – a pioneer of solid-state supramolecular chemistry from UNSW, where Len received his Ph.D. – discusses substances with weak molecular forces, but high melting points.^[20]

Suzanne Smith and Nadine DiBartolo, both former students of Len from JCU, report on the use of ⁶⁴Cu for imaging and radioimmunotherapy, work continuing from projects started with Len in the late 1990s.^[21] Len's former Honours student David Schilter presents nickel-iron hydrogenase models featuring redox active ligands, work which was conducted in Korea.^[22] Former Lindoy postdoc Feng Li (Western Sydney University) presents the complexation behaviour of N₄O₂ hexadentate Schiff-base ligands towards 3d metal ions.^[23] Len's former Master's student Jon Beves (UNSW) and Ph.D. student Jason Price report on the use of hydrogen bonding of ruthenium(II) terpyridine complexes for crystal engineering.^[24] Former Lindoy Ph.D. student Jack Clegg (University of Queensland) with former Lindoy postdoc John McMurtrie (Queensland University of Technology) and others discuss halogen bonding,^[25] and with Jason Price report on 2,2'-bipyridine-containing macrocycles^[26] linked to previous work on a [2]catenane reported previously in *Aust. J. Chem.*^[27]

Happy birthday Len!

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