

## J.K.N. JONES

John Kenyon Netherton Jones obtained his Ph.D. at Birmingham University. He was hired as an assistant lecturer and then lecturer at Bristol University 1936-1944, where he engaged in munitions research and training during the Second World War. He resigned at the end of the war with the rank of captain, and returned to academic work as senior lecturer at Manchester University 1945-1948 and then as reader in chemistry at Bristol University 1948-1953. He came to Queen's University in 1953 as Chown Research Professor of Chemistry, a position he held until his death in 1977.

Professor Jones' outstanding achievements in carbohydrate chemistry were recognized by his election as Fellow of the Royal Society of London in 1957 and of the Royal Society of Canada in 1959. The Division of Carbohydrate Chemistry of the American Chemical Society presented him with the Claude S. Hudson Award in 1969, and in 1975 he received the Anselme Payen Award from the Cellulose, Paper and Textile Division. In March 1975, he was awarded the third Sir Norman Haworth Memorial Medal of The Chemical Society (London).

Professor Jones was, at all times, an educator of the highest rank and an inspiration to a large number of graduate students. From these students he evoked, as a result of his enthusiasm, sincerity, and gentle character, tremendous respect and affection. All of his students, former research associates, colleagues, and friends will long remember this truly fine and outstanding gentleman.

The J.K.N. Jones Visitorship was established in memory of Professor Jones, and is funded by the income from the bequests made in his name by his friends, colleagues and former students.

## PREVIOUS JONES LECTURERS

- 2018 • *T.F. Miller III*
- 2017 • *J. Bode*
- 2016 • *F. Winnik*
- 2015 • *M. Pinto*
- 2015 • *T. Swager*
- 2014 • *W. Yang*
- 2013 • *D. Milstein*
- 2012 • *J.F. Stoddard*
- 2011 • *J.A. Caruso*
- 2010 • *T. Marks*
- 2010 • *G. van Koten*
- 2009 • *P.B. Corkum*
- 2008 • *M. Gruebele*
- 2005 • *W. Klemperer*
- 2001 • *G. Ozin*
- 1997 • *M.S. Brookhart*
- 1993 • *B.O. Fraser-Reid*
- 1990 • *S. Hanessian*
- 1982 • *R. U. Lemieux*

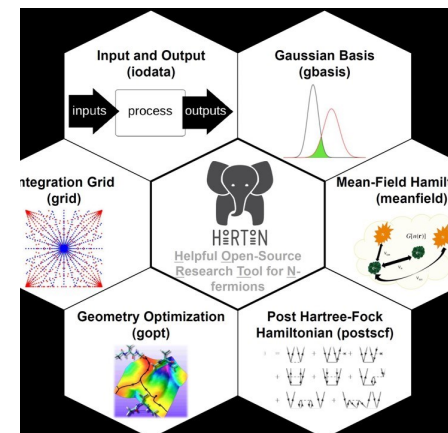


### Department of Chemistry Queen's University

is honoured to host the  
2020 Jones Lecturer:

**Prof. Paul W. Ayers**

McMaster University



“Strong Electron Correlation”

Friday, January 17, 2020  
11:30 a.m.  
Room 117, Chernoff Hall

## PROFESSOR PAUL W. AYERS



### Professor Paul W. Ayers

Department of Chemistry & Chemical Biology  
McMaster University  
Canada

**Dr. Ayers Group** develops novel mathematical and computational tools for describing and predicting chemical processes. Their research focuses on the formulation of qualitative and quantitative tools for understanding chemical reactivity and predicting chemical reaction mechanisms, typically using the mathematical framework provided by density functional theory (DFT). More recently, their research has extended to correlated wavefunction methods, and especially the challenge of developing new wavefunction forms that are computationally efficient enough to be applicable to large systems, conceptually facile enough to be interpretable, and chemically robust enough to model molecular structures for which conventional quantum chemistry methods are unreliable.

Perhaps the most unconventional facet of the Ayers group's research is its emphasis on developing tools for understanding, at a qualitative level, why chemical reactions happen. Their work in conceptual DFT focuses on deriving qualitative principles from exact theory. To this end, Ayers group pioneered the axiomatic approach to conceptual quantum chemistry—first choose what properties a chemical concept should have; then derive its mathematical reification—and has used this approach to develop new population analysis methods, to obtain new insight into chemical transferability, and to develop new molecular mechanics force fields.

At a quantitative level, the Ayers group pursues accurate and efficient quantum chemistry methods. Their recent research has focussed on developing new wavefunction methods based on the projected Schrödinger equation, including methods based on geminals (electron pairs) and unconventional coupled-cluster methods.

## SELECTED HONOURS & AWARDS

- 2016-present Canada Research Chair in Theoretical Chemistry (Tier 1)
- 2016 Elected to the College of Young Scholars of the Royal Society of Canada
- 2014 Rutherford Memorial Medal in Chemistry from the Royal Society of Canada
- 2013 Steacie Prize for Natural Sciences for the top Canadian scientist or engineer under 40
- 2013-15 E. W. R. Steacie Memorial Fellowship from the National Sciences and Engineering Research Council
- 2012 Annual Medal of the International Academy of Quantum Molecular Science
- 2012 Dirac Medal of the World Association of Theoretically-Oriented Chemists
- 2009 Keith Laidler Award from the Canadian Society for Chemistry
- 2008-10 Alfred P. Sloan Fellowship