

HETEROCYCLES, Vol. 88, No. 1, 2014, pp. 1 - 4. © 2014 The Japan Institute of Heterocyclic Chemistry
DOI: 10.3987/COM-13-S(S)Foreword

PREFACE TO HETEROCYCLES ISSUE

HONORING THE 77th BIRTHDAY OF PROFESSOR VICTOR SNieckus

Having known Professor **Victor Snieckus** for more than 50 years, it is a particular pleasure and distinct honor for me to introduce this special issue of *Heterocycles* in celebration of his 77th birthday.

I first met Vic at the University of Oregon in 1963 when I started my graduate work and he was a third-year graduate student working with Virgil Boekelheide. Although Vic and I were in different research groups, the close-knit organic chemistry groups of Boekelheide, Lloyd Dolby, Tom Koenig, and Leroy Klemm invariably included numerous blackboard sessions, soft ball games, hiking in the beautiful Cascade Mountains of Central Oregon, and, most seriously, pool games at the local pub after Monday evening organic seminars. Conspicuously, also at these latter occasions, Vic was the inevitable champion of “Cardinal Puff.”

Vic Snieckus was born in Kaunas, Lithuania in 1937 and spent his childhood in Germany during World War II. He received the B.Sc. degree at the University of Alberta (1959) where he was strongly influenced by an iconoclastic teacher, Rube Sandin, the discover of the diphenyliodonium salt. Vic began graduate work at the University of California, Berkeley, where he received methodical training in physical organic chemistry with Don Noyce (M.Sc., 1961), but, fortunately for us, he decided that there should be more to organic chemistry than Hammett sigma-rho plots and he migrated to Oregon where he discovered a passion for synthesis with Virgil Boekelheide, a consummate teacher and research mentor (Ph.D., 1965). Following a postdoctoral year with Ted Edwards (NSERC, Ottawa), Vic began his independent career at the University of Waterloo (1966), rising to Full Professor in 1979, and where he held the Monsanto/NRC Industrial Research Chair in Chemical Synthesis and Biomolecular Design (1992-1998). Upon moving to Queen’s University (1998), he was appointed to the inaugural Bader Chair in Organic Chemistry (1998-2009). Vic currently continues his fundamental research as Bader Chair Emeritus and is also the Director of *Snieckus Innovations*, a recently formed institute for the synthesis of small molecules for pharmaceutical and agrochemical industries.

The rich and omnipresent chemistry of Vic Snieckus, which is summarized later, has received numerous awards and recognition: Alfred Bader Award (1993); Fellow, Royal Society of Canada (1993);

Humboldt Forschungspreis (1996); R.U. Lemieux Award (1997); Fellow, Lithuanian Academy of Sciences (1999); Killam Fellowship (2000-2001); Arthur C. Cope Scholar Award of the American Chemical Society (2001); International Society of Heterocyclic Chemistry Award (2001); Invitational Fellowship, Japan Society for the Promotion of Science (2001); Order of the Grand Duke Gediminas of Lithuania for the promotion of chemistry and chemists in the Baltic States via *Balticum Organicum Syntheticum* Conferences (2002), which is the highest award from the President of Lithuania; Arfvedson-Schlenk Award of the Gesellschaft Deutscher Chemiker Gesellschaft (GDCh) (2003); Bernard Belleau Award of the Canadian Society of Chemistry (2005); Novartis Lecturer Worldwide and Eastern Europe (2005 and 2009); Givaudan/Karrer Medal, University of Zurich (2008); *Honoris causa* of the Technical University of Tallinn, Estonia, for contributions via *Balticum Organicum Syntheticum* Conferences (2009); Fellow of the American Chemical Society (2009), one of only two foreign awardees of 150; Lithuanian Academy of Sciences Laureate (2010); Excellence In Research, Queen's University (2011); Alumni Award for a Distinguished BSc Graduate, University of Alberta (2011); and Global Leader in the Science of Lithuanian Origin, an award from the President of Lithuania (2012).

The chemistry discovered and developed by Vic and his students has appeared in more than 350 publications, numerous reviews, and nine patents. Vic Snieckus is probably most well known for his development and application of the Directed *ortho* Metalation reaction (DoM), which has achieved *Name Reaction* status in view of its immense importance and extensive utility particularly in the synthesis of polysubstituted aromatics and heteroaromatics. More recently, the directed remote metalation (DreM) reaction and DoM – linked transition metal catalyzed cross coupling, particularly the Suzuki-Miyaura reaction extension, were first uncovered in his laboratories. This chemistry has found broad application, especially in the pharmaceutical industry; in the words of a Research Director: “When we say ‘let’s do it by Snieckus chemistry’, we know exactly what we mean.” In this regard, Vic’s reviews on DoM are widely cited; for example, the *Chemical Reviews*, 1990, to name just one.

Long before Vic’s foray into the world of metalation, he was a pioneer in exploring the photochemistry of pyridinium salts and related heterocycles, which led him to discover new azepine and diazepine chemistry. This was soon followed by indole and carbazole studies, and the synthesis of several alkaloid model systems of the *Cephalotaxus* and stemmadenine families. But, the major focus of Vic’s research program changed in 1978 when he and his students first revealed the power of the DoM reaction. For the subsequent 35 years, Vic has continued to expand the utility of this reaction. The list of natural products that have flowed from the Snieckus group via DoM methodology is long, with no end in sight: anthraquinone alkaloids, phthalideisoquinone alkaloids, ellipticine alkaloids, phenanthro-quinolizidine

alkaloids, phenanthro-indolizidine alkaloids, pyrethroids, hydrangenol, phyllo dulcin, enterolactone, enterodiol, *cis*-alpinigenine, mullein, kigelin, anthramycin, X-14881 C, ochromycinone, ochratoxins A and B, aflatoxins B1 and B2, furanonaphthoquinones, azafluorenone alkaloids, ismine, ungerimine, hippadine, gymnopusin, eupolauramine, imeluteine, dengibsin, beta-lapachone, amphimedine, xanthonones, kinobscurinone, phenanthroviridin and gilvocarcin V, M, and E aglycones, piperolactam C, buflavine and 8-*O*-demethylbuflavine, radulanin A, helianane, plicadin, pyrrolophenanthridone alkaloids, acridone and pyanoacridone alkaloids, panacene, schumanniohytine, gilvocarcin and arnottin aglycones, ergot alkaloid analogues, and beta-amino acids. Equally noteworthy to Vic's use of DoM in natural product synthesis are his DoM syntheses of aromatic systems: biphenyls and terphenyls, ferrocenes, azaindoles, cyclophanes, calix[4]arenes, indolo-4,5-quinodimethanes, quinones, phosphines, and thiophenols; studies that also include halogen-dance, aryne, and solid-phase chemistry. Truly, something for everyone! One might say that the Snieckus-DoM reaction is to an aromatic ring what ring-closing metathesis is to a diene.

Vic has a very strong interest in environmental chemistry, from both a teaching and scholarly viewpoint. He has published important work on the metabolism and biodegradation of polychlorinated biphenyls, the mutagenicity and carcinogenicity of nitrosamines, nitrosourea, and benzo[*a*]pyrene, and has described concise syntheses of several polycyclic aromatic hydrocarbons of importance to cancer researchers (e.g., benz[*a*]anthracene, benzo[*c*]phenanthrene, benzopyrenes). Of great interest is his work with ellagic acid and its anticancer properties, and his binding studies with the melatonin receptor.

Vic's organizing talent is legendary. In addition to the *Balticum Organicum Syntheticum* Conferences in Lithuania, which Vic and his Baltic colleagues established in 2000, he organized a very successful *International Society of Heterocyclic Chemistry* Conference in Waterloo in 1985, the same year that he was the President of this society. Vic also organized two highly enjoyable "VB Reunions" in 1991 and 1999 for the former group members of Virgil Boekelheide. He was the Chairman of the American Chemical Society Organic Division in 1989-1990. He is the Editor of the Americas of *Synlett*, the Heterocycles section Editor of *Synfacts*, the Regional Editor for the *Canadian Journal of Chemistry*, and the Synthesis Editor for *Polycyclic Aromatic Compounds*.

On a personal note, I spent a delightful and productive mini-sabbatical with Vic and his group in the winter of 1973. Despite the frequent nasty weather in the wind-swept town of Waterloo, what made my nightly walks home from the campus gratifying was looking forward to the late night hockey games at Vic's house!

Dear Vic, on this very special occasion, I know that you will treasure this issue of *Heterocycles*, which is dedicated to you for your ever significant and often dazzling contributions to our field. Congratulations, and I look forward to your next publication as well as our next hockey game!

Gordon W. Gribble

Professor Gordon W. Gribble

Department of Chemistry

Dartmouth College

Hanover, NH, USA



Gordon W. Gribble is a native of San Francisco, California, and completed his undergraduate education at the University of California at Berkeley (1963). He earned a Ph.D. in organic chemistry at the University of Oregon (1967). After a National Cancer Institute Postdoctoral Fellowship at the University of California, Los Angeles, he joined the faculty of Dartmouth College in 1968 where he has been Full Professor of Chemistry since 1980. In 2005, he was named to the inaugural endowed Chair as “The Dartmouth Professor of Chemistry.” Dr. Gribble has published 350 papers and reviews in natural product synthesis, synthetic methodology, heterocyclic chemistry, natural organohalogen compounds, and synthetic triterpenoids, one of which advanced to Phase 3 clinical trials for the treatment of chronic kidney disease in Stage 4 diabetes patients. Since 1995 he has co-edited the annual series “Progress in Heterocyclic Chemistry”, and co-authored “Palladium in Heterocyclic Chemistry”, now in its 2nd edition. He is also written two monographs documenting more than 5,000 naturally occurring organohalogen compounds. As a home winemaker for the past 36 years, with many national awards, he has a strong interest in the chemistry of wine and winemaking.