

Professor Hans-Günther (Hagga) Schmalz

A tribute



This special issue of Arkivoc is dedicated to Professor Hans-Günther (Hagga) Schmalz, on the occasion of his retirement, his contribution to organometallic-mediated organic synthesis and his positive impact on the chemists of developing nations

Published on line 02-25-2025

Prof. Hans-Günther (Hagga) Schmalz, has certainly enjoyed a colourful, impactful and productive academic career.

Hans-Günther (known as Hagga by his friends and colleagues) was born in 1957 in Wiesbaden, South-West Germany, and grew up in the small village of Kronberg im Taunus in the Frankfurt region. He graduated from high school in 1976, and then studied for a Diploma in chemistry at Goethe University, Frankfurt (1983 graduand), followed by a doctoral degree (Dr. phil. nat) under Prof. Gerhard Quinkert, awarded in 1985. His PhD was followed by two years (1986-1988) as a Liebig Postdoctoral Fellow in the research group of Prof. Martin F. Semmelhack in Princeton, USA, in the area of organic chemistry research involving applied organometallic chemistry and focused on nucleophile additions to π -complexes.

He then joined the Goethe University Frankfurt for the start of his independent research career and completed his habilitation in 1993 by submitting a thesis entitled “Chiral transition metal π -complexes as synthesis building blocks”. His first senior academic position was a C3 Professor of Organic Chemistry at the TU Berlin (1994-1999), after which he was appointed to a professorial C4 chair position at the University of Cologne (Köln) in 1999. This university has remained Hagga’s academic home, even after his official retirement in August 2023 – for over two decades Hagga has managed a productive group of young postgraduate and postdoctoral researchers (see Figure 1 for an example of a Schmalz group photo).



Figure 1. Schmalz research group photo (June 2022), on the occasion of Prof. Schmalz’s 65th birthday.

Hagga Schmalz's research interests have resulted in many impactful outputs, including over 275 manuscripts in the chemical and applied chemistry literature. Areas to which the Schmalz research group have contributed include the following as examples (with selected representative examples listed as references):

- a) stoichiometric and catalytic applications chiral transition metal- π complexes for the enantioselective synthesis of natural products – this included the first catalytic-enantioselective approach to planar-chiral ferrocenes by asymmetric C-H insertion reactions¹ and electron transfer-driven synthetic transformations of arene-Cr(CO)₃ complexes.²

- b) the application of stable transition metal- π complexes as bioactive molecules of relevance in biological and medicinal contexts. These included apoptosis-inducing iron-containing nucleoside analogs³ and oxy-substituted diene-Fe(CO)₃ complexes as enzyme-triggered CO-releasing molecules (ET-CORMs).⁴
- c) the development and use of novel methods to synthesize natural products and (potentially bioactive) derivatives or analogs for further investigations. The natural product inspirations for these (ad)ventures include colchicine,⁵ dysiherbols,⁶ pestalone,⁷ pseudopterosins,⁸ tocopherol⁹, rare steroids¹⁰ and other challenging compounds.
- d) The development and extension of catalytic organometallic methods, with highlight the development of modular chiral phosphine-phosphite ligands¹¹ for enantioselective transition metal catalysis applications such as: nickel-catalyzed hydrocyanations,¹² copper-catalyzed 1,4 Grignard additions¹³ and cobalt-catalyzed hydrovinylation reactions.¹⁴
- e) the synthesis of polycyclic secondary structure mimetics for the selective inhibition of physiologically relevant protein-protein interactions; for example, the development of high-affinity small molecule EVH1 inhibitors that inhibit the migration of highly invasive tumor cells.¹⁵

Hagga Schmalz has also fulfilled many leadership roles within his local and the broader chemistry communities; these include:

- a) Tertiary level education roles at the of University of Cologne (Köln), such as the Dean of the Faculty of Mathematics and Natural Sciences at (2008-2011) and the Director of the Department of Chemistry (2013-2017).
- b) The broader German chemical fraternity, as a review board member for Chemistry of the German Research Foundation (DFG, 2012 to 2020) and a board member of the German Chemical Society (GDCh, 2016 to 2019). Other honorary volunteer positions include being a member of the Georg Forster Committee of the Humboldt Foundation (2003-2012) and the presidency of the European Chemistry Thematic Network Association (ECTN, 2005 to 2007).
- c) As postgraduate mentor, he has supervised >100 doctoral students and several post-doctoral students, whilst also being acknowledged as undergraduate “teacher” in terms of excellence in undergraduate chemistry tuition.
- d) In terms of being organizer and chairman of conferences, for example, the chairing the high-profile “European Symposium of Organic Chemistry” (ESOC 2017) in Cologne. We would also like to highlight his invaluable contributions to binational conferences, for example the two SACI-DFG-supported Binational Organic Chemistry Conferences (BOCC) in 2008 (Kruger National Park, Mpumalanga, South Africa) and 2013 (Tützing, Bavaria, Germany).
- e) Internationally, his contributions have led to deep scientific and personal relationships with colleagues across the globe, including those from developed and developing nations such as Argentina, Afghanistan, China, Turkey, Russia and South Africa.



Figure 2. Collage of photos from the Binational Organic Chemistry Conferences (BOCC) in 2008 (Kruger National Park) in which Hagga Schmalz (bottom picture, far left) was the co-organizer of the German chemist delegation.

It is therefore an honor for us to preface the Commemorative Issue dedicated to Prof. Hagga Schmalz in recognition of his personal and chemical impact, which have certainly transcended global, cultural and scientific boundaries. We trust that the Arkivoc manuscripts accepted within this focused issue will demonstrate “Hagga’s” impact and the goodwill that pervade his research interactions. We wish him well on his retirement, sound health and much focused time to spend on his family, his broader “chemistry” family and of course his broader life interests.

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[COI note – both of us have previous publications with Prof. Schmalz]^{2, 16-17}

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