

List of selected publications

Dr. Christine Margarete Steenkamp

Updated December 2011

Publications in refereed journals

- C.M. Steinmann and E.G. Rohwer (US), H. Stafast (Institut für physikalische Hochtechnologie in Jena, Germany). "Accurate laboratory wavelengths of the vacuum ultraviolet A($v'=3$)-X($v''=0$) band of $^{12}\text{C}^{17}\text{O}$ and $^{12}\text{C}^{18}\text{O}$ ", *Astrophysical Journal* 590, L123-L126, 2003.
- C.M. Steinmann, A. du Plessis, E.G. Rohwer, "High-resolution vacuum ultraviolet laser spectroscopy of molecules in a free supersonic jet: in search of rare CO isotopomers and CO-Ar van der Waals molecules", *S. Afr. J. Sci.* 101, 87-88, 2005
- A. du Plessis, C.M. Steinmann, E.G. Rohwer, "Experimental conditions for vacuum ultraviolet laser spectroscopy", *S. Afr. J. Sci.* 101, 93-94, 2005.
- C.M. Steenkamp, Anton du Plessis, Erich G. Rohwer, "An improved experimental setup for high resolution vacuum ultraviolet laser spectroscopy", *S. Afr. J. Sci.* 101, 272-275, 2005.
- A. du Plessis, E.G. Rohwer, C.M. Steenkamp, "Accurate laboratory wavelengths of the A $^1\Pi(v' = 0 - 5)$ - X $^1\Sigma^+(v'' = 0)$ vibronic bands of $^{12}\text{C}^{17}\text{O}$ and $^{12}\text{C}^{18}\text{O}$ ", *Astrophysical Journal Supplement Series* 165, 432, 2006.
- A. du Plessis, E.G. Rohwer, C.M. Steenkamp, "Investigation of four Carbon Monoxide isotopomers in natural abundance by laser induced fluorescence in a supersonic jet", *Journal of Molecular Spectroscopy* 243, 124-133, 2007.
- P.K. Buah-Bassuah, H.M. von Bergmann, E.T. Tachie, C.M. Steenkamp, "A portable fibre-probe ultraviolet light emitting diode (LED)-induced fluorescence detection system", *Measurement Science and Technology* 19, 025601, 2008.
- S Ombinda-Lemboumba, A du Plessis, RW Sparrow, P Leroala, LR Botha, CM Steenkamp, EG Rohwer, "Femtosecond pump probe spectroscopy for the study of energy transfer of

light harvesting complexes from extractions of spinach leaves”, South African Journal of Science 105, 376, 2009.

G.D. Dickenson, A.C. Nortje, C.M. Steenkamp, E.G. Rohwer, A. du Plessis, "Accurate Laboratory Wavelengths of the $e^3\Sigma^-(v'=5)-X^1\Sigma^+(v''=0)$ band of $^{12}\text{C}^{16}\text{O}$ ", Astrophysical Journal Letters 714, L268-L270, 2010.

G.P. Nyamuda, E.G. Rohwer, C.M. Steenkamp, H. Stafast, "First Comparison of Electric Field Induced Second Harmonic of NIR Femtosecond Laser Pulses in Reflection and Transmission Generated from Si/SiO₂ Interfaces of a Silicon Membrane”, Applied Physics B Lasers and Optics, DOI 10.1007/s00340-011-4682-1, 2011.

Papers in non-refereed journals

C.M. Steenkamp, "Tuneable laser spectroscopy at the Laser Research Institute", Physics Comment, September 2009, p. 16-18. (Physics Comment is the official electronic magazine for the Physics community of South Africa, 4 issues per year. This was an invited paper giving an overview of the research for which I was awarded the Silver Jubilee Medal of the South African Institute of Physics in July 2009.)

Conference presentations as invited plenary speaker

CM Steenkamp, "High resolution laser spectroscopy of cold atoms and molecules”, 55th Annual Conference of the South African Institute of Physics, Pretoria, South Africa, 6-10 September 2010 (Plenary address as recipient of the SAIP Silver Jubilee Medal in 2009).

Presentations at international conferences

C.M. Steinmann and E.G. Rohwer (US), C.R. Vidal (Max Planck Institut für extraterrestrische Physik, Garching, Germany). "A tunable coherent source for laser spectroscopy in the vacuum ultraviolet”, Colloquium Spectroscopicum Internationale XXXII, July 2001, Pretoria, South Africa. (Oral presentation.)

A. du Plessis, C.M. Steinmann, E.G. Rohwer. "A Raman laser as spectroscopic tool” Colloquium Spectroscopicum Internationale XXXII, July 2001, Pretoria, South Africa. (Poster presentation.)

- C.M. Steinmann and E.G. Rohwer (US), H. Stafast (Institut für physikalische Hochtechnologie in Jena, Germany), M.C. Salazar and A.J. Hernández (Universidad Simón Bolívar, Caracas, Venezuela). “Laser spectroscopy of a flow-cooled sample: In search of CO-Ar van der Waals molecules”, International Symposium on Analytical Science - Analitika 2002, December 2002, Stellenbosch, South Africa. (Poster presentation.)
- A. du Plessis, C.M. Steinmann, H.M. von Bergmann, P.E. Walters, E.G. Rohwer. “A tunable pulsed infrared Raman laser”, International Symposium on Analytical Science - Analitika 2002, December 2002, Stellenbosch, South Africa. (Poster presentation.)
- A. du Plessis, C.M. Steinmann, E.G. Rohwer. “Experimental parameters in vacuum ultraviolet laser spectroscopy”, International Conference on Lasers and Applications, August 2003, Windhoek, Namibia. (Oral presentation.)
- A. du Plessis, C.M. Steinmann, E.G. Rohwer. “High-resolution vacuum ultraviolet laser spectroscopy of molecules in a free supersonic jet: in search of rare CO isotopomers and CO-Ar van der Waals molecules”, International Conference on Lasers and Applications, August 2003, Windhoek, Namibia. (Oral presentation.)
- A. du Plessis, E.G. Rohwer, C.M. Steenkamp, “Investigation of four carbon monoxide isotopomers in natural abundance by laser induced fluorescence in a supersonic jet”, 19th International Conference on High Resolution Molecular Spectroscopy PRAHA2006, Prague, Czech Republic, 29 Augustus – 2 September 2006.
- G.P. Nyamuda, C.M. Steenkamp, E.G. Rohwer, “Characterisation of an external cavity diode laser for laser cooling and spectroscopy applications”, 6th EBASI International conference on physics and technology for sustainable development in Africa, Cape Town, 24-26 January 2007. (Poster presentation.)
- Saturnin Ombinda-Lemboumba, Dr A. du Plessis, Dr L.R. Botha, Prof E.G. Rohwer, Dr C.M. Steenkamp, Dr A.B. Moubissi, “Pump-probe spectroscopy for the investigation of ultrafast processes: Proof of principle experiment with Malachite Green”, Conference on Optics and laser applications in medicine and environmental monitoring for sustainable development, 19-24 November 2007, University of Cape Coast, Cape Coast, Ghana.

C.M. Steenkamp, A. du Plessis, E.G. Rohwer, A.C. Nortje, G.D. Dickenson, "High resolution vacuum ultraviolet laser spectroscopy of four carbon monoxide isotopomers", ICO-21 2008 Congress, Sydney, 7-10 July 2008. (Abstract published in ICO 21-2008 Congress, Book of Proceedings, p. 154, ISBN: 0858258153, 2008.)

G.D. Dickenson, E.G. Rohwer, C.M. Steenkamp, A.C. Nortje, A. du Plessis, "Generation of VUV radiation in a metal vapour and its applications to Spectroscopy", Frontiers in Optics Conference, Rochester, NY, 2008

G.P. Nyamuda, E.G. Rohwer, C.M. Steenkamp and H. Stafast, "Investigation of a double sided Si/SiO₂ interface of a free standing silicon micromembrane by optical second-harmonic generation", International Conference of Laser Applications, Cairo, Egypt, May 2009.

C.M. Steenkamp, "Vacuum ultraviolet laser spectroscopy", Third World Organisation for Women in Science Fourth General Assembly and International Conference, Beijing, Peoples Republic of China, 27-30 June 2010. (Invited paper as TWOWS awardee.)

C.M. Steenkamp, E.G. Rohwer, A. du Plessis, G.D. Dickenson, A.C. Nortje, "A vacuum ultraviolet laser source as tool for spectroscopy and analysis", International Conference on Analytical Science - Analitika 2010, 5-9 December 2010, Stellenbosch, South Africa.

C.M. Steenkamp, E.G. Rohwer, A. du Plessis, G. Dickenson, A. Nortje, "Laser spectroscopy using a novel vacuum ultraviolet laser source", 4th IUPAP International Conference on Women in Physics, Stellenbosch, South Africa, 5-8 April 2011. (Abstract will be published in AIP proceedings.)

Presentations at international symposia

G.P. Nyamuda, G.N. Botha, C.M. Steenkamp and E.G. Rohwer; Development and characterisation of an external cavity diode laser for laser cooling and spectroscopy applications, 1st African Laser Center Student Symposium, May 2008, Kariega Game Reserve, South Africa. (Oral presentation)

C.I. Rigby, C.M. Steenkamp, E.G. Rohwer, "Development of a laser cooling and magneto-optical trapping experiment for rubidium atoms", 2nd African Laser Centre Student Symposium, 2-5 July 2009, Kariega Game Reserve, South Africa. (Oral presentation)

G.P. Nyamuda, E.G. Rohwer, C.M. Steenkamp, H. Stafast, "Investigation of a double sided Si/SiO₂ interface of a free standing silicon microstructure by optical second-harmonic generation", 2nd African Laser Centre Student Symposium, 2-5 July 2009, Kariega Game Reserve, South Africa. (Poster presentation)

S. Ombinda-Lemboumba, A du Plessis, AB Moubissi, EG Rohwer, LR Botha, CM Steenkamp, "Development of femtosecond pump-probe spectroscopy for ultrafast biological studies", 2nd African Laser Centre Student Symposium, 2-5 July 2009, Kariega Game Reserve, South Africa.

W.I. Ndebeka, G Nyamuda, P. Neethling, C.M. Steenkamp, H. Stafast and E.G. Rohwer, "Investigating Si/SiO₂ interfaces using EFISH technique", African Laser Centre Student Symposium, Zevenwacht, Kuilsrivier, South Africa, 9-12 November 2011. (Oral presentation)

Recent presentations at national conferences

A. du Plessis, C.M. Steenkamp, E.G. Rohwer. "Simultaneous VUV Laser-Induced Fluorescence and Absorption measurements of carbon monoxide", 49th Annual Conference of the South African Institute of Physics, July 2004, Bloemfontein. (Oral presentation.)

A. du Plessis, P. Huang, G.J. Arendse, C.M. Steenkamp, E.G. Rohwer, "Spectral characterisation of a VUV laser source", 49th Annual Conference of the South African Institute of Physics, July 2004, Bloemfontein. (Poster presentation.)

A. du Plessis, M. Bente, L.S. McDermott, C.M. Steenkamp, E.G. Rohwer, "Single photon laser ionisation in a time of flight mass spectrometer", 49th Annual Conference of the South African Institute of Physics, July 2004, Bloemfontein. (Poster presentation.)

C.M. Steenkamp, "A ridge waveguide laser diode as a tunable narrow-bandwidth source for spectroscopy", 50th Annual Conference of the South African Institute of Physics, July 2005, Pretoria. (Oral presentation.)

A. du Plessis, E.G. Rohwer, C.M. Steenkamp, "New rovibronic lines of CO detected by VUV laser spectroscopy", 50th Annual Conference of the South African Institute of Physics, July 2005, Pretoria. (Oral presentation.)

- A. du Plessis, E.G. Rohwer, C.M. Steenkamp, "Selectivity and sensitivity in VUV laser spectroscopy", 50th Annual Conference of the South African Institute of Physics, July 2005, Pretoria. (Poster presentation.)
- A. du Plessis, E.G. Rohwer, C.M. Steenkamp, "High resolution laser spectroscopy of carbon monoxide", 51st Annual Conference of the South African Institute of Physics, July 2006, Cape Town. (Oral presentation.)
- G.P. Nyamuda, C.M. Steenkamp, E.G. Rohwer, "Characterisation of an external cavity diode laser for laser cooling and spectroscopy applications", 51st Annual Conference of the South African Institute of Physics, July 2006, Cape Town. (Oral presentation.)
- C.M. Steenkamp, G.P. Nyamuda, E.G. Rohwer, "Design and development of an external cavity diode laser system for laser cooling and spectroscopy", 51st Annual Conference of the South African Institute of Physics, July 2006, Cape Town. (Poster presentation.)
- S. Ombinda-Lemboumba, H.M. von Bergmann, C.M. Steenkamp, E.G. Rohwer, "Laser induced chlorophyll fluorescence as tool to probe the effect of GFP in tobacco leaves", 51st Annual Conference of the South African Institute of Physics, July 2006, Cape Town. (Oral presentation.)
- S. Ombinda-Lemboumba, P.K. Buah-Bassuah, D. Spangenberg, H.M. von Bergmann, C.M. Steenkamp, E.G. Rohwer, "Laser induced chlorophyll fluorescence of lemon", 51st Annual Conference of the South African Institute of Physics, July 2006, Cape Town. (Poster presentation.)
- P.K. Buah-Bassuah, S. Ombinda-Lemboumba, H.M. von Bergmann, E.G. Rohwer, C.M. Steenkamp, "Development of laser-induced fluorescence imaging system for the quality assessment of fruits", 51st Annual Conference of the South African Institute of Physics, July 2006, Cape Town. (Oral presentation.)
- G.N. Botha, C.M. Steenkamp, E.G. Rohwer, "Tunable diode laser spectroscopy of rubidium", 52st Annual Conference of the South African Institute of Physics, July 2007, Johannesburg. (Poster presentation.)
- G.P. Nyamuda, C.M. Steenkamp, E.G. Rohwer. "Development and characterisation of a Littrow configuration external cavity diode laser (ECDL) for laser cooling and spectroscopy of

neutral rubidium atoms”, 52st Annual Conference of the South African Institute of Physics, July 2007, Johannesburg. (Oral presentation.)

G.D. Dickenson, E.G. Rohwer, C.M. Steenkamp, A.C. Nortje, A. du Plessis. “Rotationally resolved VUV spectra of CO”, 52st Annual Conference of the South African Institute of Physics, July 2007, Johannesburg. (Oral presentation.)

A.C. Nortje, E.G. Rohwer, C.M. Steenkamp, G.D. Dickenson, A. du Plessis, “Crossed concentric heatpipe development”, 52st Annual Conference of the South African Institute of Physics, July 2007, Johannesburg. (Poster presentation.)

S. Ombinda-Lemboumba, A. du Plessis, A.B. Moubissi, E.G. Rohwer, L.R. Botha, C.M. Steenkamp, R.W. Sparrow. “Development of a pump-probe spectroscopy system for investigation of ultrafast energy transfer processes in photosynthesis”, 52st Annual Conference of the South African Institute of Physics, July 2007, Johannesburg. (Poster presentation.)

G.N. Botha, C.M. Steenkamp, E.G. Rohwer, “Laser spectroscopy of rubidium using a tunable external cavity diode laser”, 53rd Annual Conference of the South African Institute of Physics, July 2008, Polokwane. (Poster presentation.)

F.H. Mountfort, F.G. Scholtz, C.M. Steenkamp, “A path integral approach to the solution of the coupled-mode equations with specific reference to optical waveguides”, 53rd Annual Conference of the South African Institute of Physics, July 2008, Polokwane. (Oral presentation.)

G.D. Dickenson, A. Nortje, C.M. Steenkamp, E.G. Rohwer and A. du Plessis, “Forbidden Singlet- Triplet transitions in CO”, 53rd Annual Conference of the South African Institute of Physics, July 2008, Polokwane. (Oral presentation.)

G.D. Dickenson, A. Nortje, C.M. Steenkamp, E.G. Rohwer and A. du Plessis, “Development of a tuneable, coherent laser source in the vacuum ultraviolet (VUV)”, 53rd Annual Conference of the South African Institute of Physics, July 2008, Polokwane. (Poster presentation.)

- A.J. Hendriks, C. M. Steenkamp, A.M. Heidt, "Measurement and extraction of the Giles parameters in ytterbium doped fiber", 53rd Annual Conference of the South African Institute of Physics, July 2008, Polokwane. (Oral presentation.)
- G.P. Nyamuda, E.G. Rohwer, C.M. Steenkamp, H. Stafast, "Time-dependent second-harmonic generation from Si/SiO₂ interface probed by ultrafast femtosecond laser pulses", 53rd Annual Conference of the South African Institute of Physics, July 2008, Polokwane. (Oral presentation.)
- S. Ombinda-Lemboumba, A. du Plessis, L.R. Botha, D.E. Roberts, P. Leroala, R.W. Sparrow, E.G. Rohwer and C.M. Steenkamp, "FEMTOSECOND PUMP-PROBE SPECTROSCOPY FOR INVESTIGATION OF ULTRAFAST ENERGY TRANSFER PROCESSES IN BIOLOGICAL SAMPLES: TECHNIQUE AND CHARACTERISATION", 53rd Annual Conference of the South African Institute of Physics, July 2008, Polokwane. (Oral presentation.)
- CI Rigby, CM Steenkamp, EG Rohwer, "Development of a laser cooling and magneto-optical trapping experiment for rubidium atoms", 54th Annual Conference of the South African Institute of Physics, Durban, South Africa, 7-10 July 2009.
- GP Nyamuda, EG Rohwer, CM Steenkamp, H Stafast, "Optical second harmonic generation from Si/SiO₂ interfaces of a free standing silicon microstructure", 54th Annual Conference of the South African Institute of Physics, Durban, South Africa, 7-10 July 2009.
- S Ombinda-Lemboumba, A du Plessis, RW Sparrow, EG Rohwer, LR Botha, CM Steenkamp, "Ultrafast pump-probe spectroscopy of Zinc Phthalocynine and light harvesting complex II", 54th Annual Conference of the South African Institute of Physics, Durban, South Africa, 7-10 July 2009.
- C.M. Steenkamp, G.D. Dickenson, A.C. Nortje, E.G. Rohwer, A. du Plessis, "Detection of forbidden singlet-triplet transitions of ¹²C¹⁶O", 55th Annual Conference of the South African Institute of Physics, Pretoria, South Africa, 6-10 September 2010 (poster, abstract published electronically ISBN: 978-0-620-46211-2, available from website <http://events.saip.org.za/saip2010/index.html>).
- C.M. Steenkamp, E.G. Rohwer, A. du Plessis, A.C. Nortje, G.D. Dickenson, P.E. Walters, "Vacuum ultraviolet laser spectroscopy of four carbon monoxide isotopomers", 55th

Annual Conference of the South African Institute of Physics, Pretoria, South Africa, 6-10 September 2010 (poster, abstract published electronically ISBN: 978-0-620-46211-2, available from website <http://events.saip.org.za/saip2010/index.html>).

CI Rigby, CM Steenkamp, EG Rohwer, "Development of a laser cooling and magneto-optical trapping experiment for ultracold rubidium atoms", 55th Annual Conference of the South African Institute of Physics, Pretoria, South Africa, 6-10 September 2010 (oral presentation, abstract published electronically ISBN: 978-0-620-46211-2, available from website <http://events.saip.org.za/saip2010/index.html>).

G.P. Nyamuda, E.G. Rohwer, C.M. Steenkamp, H. Stafast, "Electric Field Induced Second Harmonic Generation from Silicon/SiliconDioxide Interfaces of Silicon Membranes", 55th Annual Conference of the South African Institute of Physics, Pretoria, South Africa, 6-10 September 2010 (oral presentation, abstract published electronically ISBN: 978-0-620-46211-2, available from website <http://events.saip.org.za/saip2010/index.html>).

G.P. Nyamuda, E.G. Rohwer, C.M. Steenkamp, H. Stafast, "Time-dependent reflectivity from a silicon/silicon dioxide interface observed by pump-probe technique", 55th Annual Conference of the South African Institute of Physics, Pretoria, South Africa, 6-10 September 2010 (poster, abstract published electronically ISBN: 978-0-620-46211-2, available from website <http://events.saip.org.za/saip2010/index.html>).

S. Ombinda-Lemboumba, A. du Plessis, L.R. Botha, E.G. Rohwer, C.M. Steenkamp, "An Ultrafast Study of Zinc Pthalocyanine in DMSO", 55th Annual Conference of the South African Institute of Physics, Pretoria, South Africa, 6-10 September 2010 (oral presentation, abstract published electronically ISBN: 978-0-620-46211-2, available from website <http://events.saip.org.za/saip2010/index.html>).

C.I. Rigby, C.M. Steenkamp, E.G. Rohwer, "Development of a laser cooling and magneto-optical trapping experiment for rubidium 87 atoms", 56th Annual Conference of the South African Institute of Physics, Pretoria, South Africa, 12-15 July 2011 (poster).

A.J. Hendriks, A. Du Plessis, C.M. Steenkamp, H. Uys, G.N. Botha and L.R. Botha, "Femtosecond Pulse Measurement and Representation Using a Joint Time-Frequency

Basis", 56th Annual Conference of the South African Institute of Physics, Pretoria, South Africa, 12-15 July 2011 (poster).

.S Ombinda-Lemboumba, A. du Plessis, C.M. Steenkamp, L.R. Botha and E.G. Rohwer, " Identification of ultrafast processes in ZnPc by pump-probe spectroscopy", 56th Annual Conference of the South African Institute of Physics, Pretoria, South Africa, 12-15 July 2011.