

Sample Environments for Neutron Reflection Experiments

Adrian R. Rennie

Controlling and modifying the conditions of a sample during an experiment are often of crucial importance. Neutron reflectivity is used to investigate a wide range of phenomena and there consequently many sample environments that have been developed. This list of publications provides references to articles about sample environments used in neutron reflection measurements.

References in the list below are sorted chronologically. The citations included in the list are not comprehensive but rather come from personal reading. The list simply contains some examples and in many fields such as magnetism, cryogenic studies etc. there is little coverage. I hope to add to the list in due course. It is useful to consult also the literature on other scattering experiments as some equipment such as humidity chambers are used also for diffraction and small-angle scattering. Grazing incidence scattering experiments will often also use similar sample environments.

In some cases, 'standard' sample environments such as facilities for temperature control or exchanging samples are mentioned in the published descriptions of instruments. There are separate lists of these papers about instruments that are sorted either by date of publication:

http://www.reflectometry.net/biblio/Neutron_reflectometer_bibliography_date_sort.pdf

or by the instrument name:

http://www.reflectometry.net/biblio/Neutron_reflectometer_bibliography_instrument_sort.pdf

Other documents provide bibliographies of papers that describe theory and calculation methods, review articles, and books as well as descriptions of software to analyse data. A short catalogue of www resources has also been made available on the world wide web for a number of years by Rennie and is available at:

<http://www.reflectometry.net/reflect.htm>

I am pleased to receive suggestions for further relevant articles or corrections of mistakes in the list below.

Adrian Rennie, 5 June 2018

Sample Environment for Reflection

Seq. No.	Reference	Digital Source - DOI	Year	Technique
61	F. A. Adlmann, P. Gutfreund, J. F. Ankner, J. F. Browning, A. Parizzi, B. Vacaliuc, C. E. Halbert, J. P. Rich, A. J. C. Dennison, M. Wolff 'Towards neutron scattering experiments with submillisecond time resolution' <i>J. Appl. Cryst.</i> 48 , (2015), 220-226.	http://dx.doi.org/10.1107/S1600576714027848	2015	Oscillatory Shear
42	Anna Angus-Smyth, Richard A. Campbell, Colin D. Bain 'Dynamic Adsorption of Weakly Interacting Polymer/Surfactant Mixtures at the Air/Water Interface' <i>Langmuir</i> , 28 , (2012), 12479–12492.	http://dx.doi.org/10.1021/la301297s	2012	Overflowing Cylinder
15	I. F. Bailey 'A review of sample environments in neutron scattering' <i>Z. Kristallogr.</i> 218 , (2003), 84-95.	http://dx.doi.org/10.1524/zkri.218.2.84.20671	2003	Review
5	Shenda M. Baker, Gregory Smith, Roger Pynn, Paul Butler, John Hayter, William Hamilton, Lee Magid 'Shear cell for the study of liquid-solid interfaces by neutron scattering' <i>Rev. Sci. Instrum.</i> 65 , (1994), 412-416.	http://dx.doi.org/10.1063/1.1145148	1994	Shear
59	A. A. Baker, W. Braun, G. Gassler, S. Rembold, A. Fischer, T. Hesjedal 'An ultra-compact, high-throughput molecular beam epitaxy growth system' <i>Review of Scientific Instruments</i> 86 , (2015), 043901.	http://dx.doi.org/10.1063/1.4917009	2015	MBE
4	T. M. Bayerl, R. K. Thomas, A. R. Rennie, J. Penfold, E. Sackmann, 'Specular reflection of neutrons at phospholipid monolayers: changes of monolayer structure and head group hydration at the transition from the expanded to the condensed phase state', <i>Biophysical Journal</i> 57 , (1990), 1095-1098.	http://dx.doi.org/10.1016/S0006-3495(90)82628-X	1990	Langmuir trough
62	N. Booth, G. Davidson, P. Imperia, S. Lee, B. Stuart, P. Thomas, K. Komatsu, R. Yamane, S. W. Prescott, H. E. Maynard-Casely, A. Nelson, K. C. Rule 'Three impossible things before lunch – the task of a sample environment specialist' <i>Journal of Neutron Research</i> 19 , (2017), 49-56.	http://dx.doi.org/10.3233/JNR-170041	2017	Conductivity, in-line
13	James Bowers, Ali Zarbakhsh, John R. P. Webster, Lian R. Hutchings, Randal W. Richards 'Neutron Reflectivity Studies at Liquid-Liquid Interfaces: Methodology and Analysis' <i>Langmuir</i> , 17 , (2001), 140–145.	http://dx.doi.org/10.1021/la001119o	2001	Liquid/liquid interface

Sample Environment for Reflection

Seq. No.	Reference	Digital Source - DOI	Year	Technique
43	Justin R. Carmichael, Gernot Rother, James F. Browning, John F. Ankner, Jose L. Banuelos, Lawrence M. Anovitz, David J. Wesolowski, David R. Cole 'High-pressure cell for neutron reflectometry of supercritical and subcritical fluids at solid interfaces' <i>Rev. Sci. Instrum.</i> 83 , (2012), 045108.	http://dx.doi.org/10.1063/1.3697999	2012	High pressure
29	T. R. Charlton, R. M. Dalgliesh, A. N. Ganshin, O. Kirichek, S. Langridge, P. V. E. McClintock 'Neutron Reflection from the Surfaces of Liquid ^4He and a Dilute $^3\text{He}/^4\text{He}$ Solution' <i>Journal of Physics: Conference Series</i> 150 , (2009), 032022.	http://dx.doi.org/10.1088/1742-6596/150/3/032022	2009	Liquid - cryogenic
27	Jae-Hie J. Cho, Gregory S. Smith, William A. Hamilton, Dennis J. Mulder, Tonya L. Kuhl, Jimmy Mays 'Surface force confinement cell for neutron reflectometry studies of complex fluids under nanoconfinement' <i>Rev. Sci. Instrum.</i> 79 , (2008), 103908.	http://dx.doi.org/10.1063/1.3005483	2008	Confinement
19	Jonathan M. Cooper, Robert Cubitt, Robert M. Dalgliesh, Nikolaj Gadegaard, Andrew Glidle, A. Robert Hillman, Roger J. Mortimer, Karl S. Ryder, Emma L. Smith 'Dynamic in Situ Electrochemical Neutron Reflectivity Measurements' <i>J. Am. Chem. Soc.</i> , 126 , (2004), 15362–15363.	http://dx.doi.org/10.1021/ja044682s	2004	Electrochemistry - redox
44	Wiebe M. de Vos, Laura L. E. Mears, Robert M. Richardson, Terence Cosgrove, Robert M. Dalgliesh, Stuart W. Prescott 'Measuring the structure of thin soft matter films under confinement: A surface-force type apparatus for neutron reflection, based on a flexible membrane approach' <i>Rev. Sci. Instrum.</i> 83 , (2012), 113903.	http://dx.doi.org/10.1063/1.4767238	2012	Confinement
30	J. A. Dura, J. LaRock 'A molecular beam epitaxy facility for in situ neutron scattering' <i>Rev. Sci. Instrum.</i> 80 , (2009), 073906.	http://dx.doi.org/10.1063/1.3169506	2009	MBE
16	Julian Eastoe, Alex Rankin, Ray Wat, Colin D. Bain, Dmitrii Styrkas, Jeff Penfold 'Dynamic Surface Excesses of Fluorocarbon Surfactants' <i>Langmuir</i> , 19 , (2003), 7734-7739.	http://dx.doi.org/10.1021/la0266740	2003	Overflowing Cylinder

Seq. No.	Reference	Digital Source - DOI	Year	Technique
31	Andrew Glidle, A. Robert Hillman, Karl S. Ryder, Emma L. Smith, Jon Cooper, Nikolaj Gadegaard, John R. P. Webster, Robert Dalgliesh, Robert Cubitt 'Use of Neutron Reflectivity to Measure the Dynamics of Solvation and Structural Changes in Polyvinylferrocene Films During Electrochemically Controlled Redox Cycling' <i>Langmuir</i> , 25 , (2009), 4093-4103.	http://dx.doi.org/10.1021/la803234e	2009	Electrochemistry - redox
17	Ravi R. Gupta, Kristopher A. Lavery, Timothy J. Francis, John R. P. Webster, Gregory S. Smith, Thomas P. Russell, James J. Watkins 'Self-Diffusion of Polystyrene in a CO ₂ -Swollen Polystyrene Matrix: A Real Time Study Using Neutron Reflectivity' <i>Macromolecules</i> 36 , (2003), 346-352.	http://dx.doi.org/10.1021/ma021215r	2003	High pressure
22	T. A. Harroun, H. Fritzsche, M. J. Watson, K. G. Yager, O. M. Tanchak, C. J. Barrett, J. Katsaras 'Variable temperature, relative humidity (0%–100%), and liquid neutron reflectometry sample cell suitable for polymeric and biomimetic materials' <i>Rev. Sci. Instrum.</i> 76 , (2005), 065101.	http://dx.doi.org/10.1063/1.1921550	2005	Humidity chamber
38	Maja S. Hellsing, Adrian R. Rennie, Lionel Porcar, Carl-Johan Englund 'Scattering from Dilute and Lamellar Phase Solutions of Aerosol-OT Simultaneous Probe of Surface Structures and Bulk' <i>Progr. Colloid Polym. Sci.</i> 138 , (2011), 139-142.	http://dx.doi.org/10.1007/978-3-642-19038-4_24	2011	Solid/liqid interface
1	R. R. Highfield, R. P. Humes, R. K. Thomas, P. G. Cummins, D. P. Gregory, J. Mingins, J. B. Hayter, O. Schärpf 'Critical Reflection of Neutrons from a Soap Film' <i>Journal of Colloid and Interface Science</i> , 97 , (1984), 367-373.	http://dx.doi.org/10.1016/0021-9797(84)90307-2	1984	Soap Film
54	E. Hüger, R. Kube, H. Bracht, J. Stahn, T. Geue, H. Schmidt 'A neutron reflectometry study on silicon self-diffusion at 900 C' <i>Phys. Status Solidi B</i> 249 , (2012), 2108-2112.	http://dx.doi.org/10.1002/pssb.201248330	2012	High temperature
50	B. Jerliu, L. Dörrer, E. Hüger, G. Borchardt, R. Steitz, U. Geckle, V. Oberst, M. Bruns, O. Schneider, H. Schmidt 'Neutron reflectometry studies on the lithiation of amorphous silicon electrodes in lithium-ion batteries' <i>Phys. Chem. Chem. Phys.</i> , 15 , (2013), 7777-7784.	http://dx.doi.org/10.1039/C3CP44438D	2013	Electrochemistry - battery

Sample Environment for Reflection

Seq. No.	Reference	Digital Source - DOI	Year	Technique
39	Christoph Jeworrek, Roland Steitz, Claus Czeslik, Roland Winter 'High pressure cell for neutron reflectivity measurements up to 2500 bar' <i>Rev. Sci. Instrum.</i> 82 , (2011), 025106.	http://dx.doi.org/10.1063/1.3553392	2011	High pressure
24	J. Katsaras, T. A. Harroun, M. P. Nieh, M. Chakrapani, M. J. Watson, V. A. Raghunathan 'Neutron Scattering from Biomaterials in Complex Sample Environments', pp. 107-126 in <i>Neutron Scattering in Biology - Techniques and Applications</i> , J. Fitter, T. Gutberlet, J. Katsaras (eds.) Springer, Berlin: 2006.	http://dx.doi.org/10.1007/3-540-29111-3	2006	Review
18	Tadanori Koga, Y.-S. Seo, K. Shin, Y. Zhang, M. H. Rafailovich, J. C. Sokolov, B. Chu, S. K. Satija 'The Role of Elasticity in the Anomalous Swelling of Polymer Thin Films in Density Fluctuating Supercritical Fluids' <i>Macromolecules</i> , 36 , (2003), 5236-5243.	http://dx.doi.org/10.1021/ma021265w	2003	High pressure
65	Mikhail Kostylev, Grace L. Causer, Charles-Henri Lambert, Thomas Schefer, Charles Weiss, Sara J. Callori, Sayeef Salahuddin, Xiaolin L. Wang, Frank Klose 'In situ ferromagnetic resonance capability on a polarized neutron reflectometry beamline' <i>J. Appl. Cryst.</i> 51 , (2018), 9-16.	http://dx.doi.org/10.1107/S1600576718000535	2018	Ferromagnetic resonance
45	Alexandros Koutsioubas, Didier Lairez, Gilbert Zalczer, Fabrice Cousin 'Slow and remanent electric polarization of adsorbed BSA layer evidenced by neutron reflection' <i>Soft Matter</i> , 8 , (2012), 2638-2643.	http://dx.doi.org/10.1039/C2SM07265C	2012	Electric field
46	S. V. Kozhevnikov, F. Radu, Yu. V. Nikitenko, V. L. Aksenov 'Reflection of Neutrons from a Magnetic Film Placed in Static and Oscillating Magnetic Fields' <i>Journal of Surface Investigation. X-ray, Synchrotron and Neutron Techniques</i> , 6 , (2012), 784-795.	http://dx.doi.org/10.1134/S1027451012100096	2012	Magnetic Field - oscillating
47	S. V. Kozhevnikov, V. K. Ignatovich, Yu. V. Nikitenko, F. Ott, F. Radu, A. Rühm, J. Major 'Neutron magnetic resonance and non-specular reflection from a magnetic film placed in an oscillating magnetic field' <i>Journal of Physics: Conference Series</i> 340 , (2012), 012084.	http://dx.doi.org/10.1088/1742-6596/340/1/012084	2012	Magnetic Field - oscillating

Sample Environment for Reflection

Seq. No.	Reference	Digital Source - DOI	Year	Technique
40	Martin Kreuzer, Thomas Kaltofen, Roland Steitz, Beat H. Zehnder, Reiner Dahint 'Pressure cell for investigations of solid-liquid interfaces by neutron reflectivity' <i>Rev. Sci. Instrum.</i> 82 , (2011), 023902.	http://dx.doi.org/10.1063/1.3505797	2011	High pressure
55	S. Krueger, C. W. Meuse, C. F. Majkrzak, J. A. Dura, N. F. Berk, M. Tarek, A. L. Plant 'Investigation of hybrid bilayer membranes with neutron reflectometry: probing the interactions of melittin' <i>Langmuir</i> 17 ,(2001), 511-521.	http://dx.doi.org/10.1021/la001134t	2001	Solid/liquid interface
14	Tonya L. Kuhl, Gregory S. Smith, Jacob N. Israelachvili, Jaroslaw Majewski, and William Hamilton 'Neutron confinement cell for investigating complex fluids' <i>Rev. Sci. Instrum.</i> 72 , (2001), 1715-1720.	http://dx.doi.org/10.1063/1.1347981	2001	Confinement
32	Y. Lauw, T. Rodopoulos, M. Gross, A. Nelson, R. Gardner, M. D. Horne 'Electrochemical cell for neutron reflectometry studies of the structure of ionic liquids at electrified interface' <i>Rev. Sci. Instrum.</i> 81 , (2010), 074101.	http://dx.doi.org/10.1063/1.3455178	2010	Electrochemical cell
25	S. Lecuyer, G. Fragneto, T. Charitat 'Effect of an electric field on a floating lipid bilayer: A neutron reflectivity study' <i>The European Physical Journal E</i> , 21 , (2006), 153-159.	http://dx.doi.org/10.1140/epje/i2006-10054-8	2006	Electric field
2	E. M. Lee, R. K. Thomas, A. R. Rennie, P. G. Cummins, E. J. Staples J.Penfold, 'Determination of the structure of a surfactant layer adsorbed at the silica/water interface by neutron reflection', <i>Chemical Physics Letters</i> 162 , (1989), 196-202.	http://dx.doi.org/10.1016/0009-2614(89)85124-3	1989	Solid/liquid interface
41	P. Lindner, R. Schweins, R. A. Campbell (2011) 'Sample environment: soft matter sample environment for small-angle neutron scattering and neutron reflectometry' <i>Neutrons in Soft Matter</i> ed T Imae, T Kanaya, M Furusaka and N Torikai (New York: Wiley). pp 383-414.	http://dx.doi.org/10.1002/9780470933886.ch14	2011	Review
8	Samantha Manning-Benson, Colin D. Bain, Richard C. Darton 'Measurement of Dynamic Interfacial Properties in an Overflowing Cylinder by Ellipsometry' <i>Journal of Colloid and Interface Science</i> , 189 , (1997), 109-116.	http://dx.doi.org/10.1006/jcis.1997.4797	1997	Overflowing Cylinder

Seq. No.	Reference	Digital Source - DOI	Year	Technique
10	S. Manning-Benson, S. R. W. Parker, C. D. Bain, J. Penfold, 'Measurement of the dynamic surface excess in an overflowing cylinder by neutron reflection', <i>Langmuir</i> 14 , (1998), 990-996.	http://dx.doi.org/10.1021/la971078	1998	Overflowing Cylinder
33	Muriel Mattenet, Karim Lhoste, Oleg Kononov, Safall Fall, Bruno Pattier, Alain Gibaud 'An X-Ray Thermo - Pressure Cell For Carbon Dioxide' <i>AIP Conf. Proc.</i> 1234 , (2010), 111-114.	http://dx.doi.org/10.1063/1.346315	2010	Pressure
20	William J. Mitchell, Paul L. Burn, Robert K. Thomas, Giovanna Fragneto, Jonathan P. J. Markham, Ifor D. W. Samuel 'Relating the physical structure and optical properties of conjugated polymers using neutron reflectivity in combination with photoluminescence spectroscopy', <i>Journal of Applied Physics</i> , 95 , (2004), 2391-2396.	http://dx.doi.org/10.1063/1.1644636	2004	Photoluminescence spectroscopy
64	Mari Mizusawa, Kenji Sakurai, Dai Yamazaki, Masayasu Takeda 'An electrochemical cell with vertical geometry for neutron reflectivity measurements' <i>Physica B: Physics of Condensed Matter</i> (2018).	http://dx.doi.org/10.1016/j.physb.2018.01.050	2018	Electrochemistry
51	M. Mukherjee, M. Souheib Chebil, Nicolas Delorme, Alain Gibaud 'Power law in swelling of ultra-thin polymer films' <i>Polymer</i> , 54 , (2013), 4669-4674.	http://dx.doi.org/10.1016/j.polymer.2013.06.025	2013	Humidity chamber
9	D. Nguyen, C. J. Clarke, A. Eisenberg, M. H. Rafailovich, J. Sokolov, G. S. Smith, 'Investigation of Polymer Brushes and Adsorbed Layers under Shear' <i>J. Appl. Cryst.</i> 30 , (1997), 680-683.	http://dx.doi.org/10.1107/S0021889897001532	1997	Shear
48	Jeanette E. Owejan, Jon P. Owejan, Steven C. DeCaluwe, Joseph A. Dura, 'Solid Electrolyte Interphase in Li-Ion Batteries: Evolving Structures Measured In situ by Neutron Reflectometry' <i>Chem. Mater.</i> , 24 , (2012), 2133-2140.	http://dx.doi.org/10.1021/cm3006887	2012	Electrochemistry - battery
34	Gunnar K. Pálsson, Vassilios Kapaklis, Joseph A. Dura, Julie Jacob, Sumedha Jayanetti, Adrian R. Rennie, Björgvin Hjörvarsson, 'Deuterium-induced volume expansion in $\text{Fe}_{0.5}\text{V}_{0.5}/\text{V}$ superlattices', <i>Physical Review B</i> , 82 , (2010), 245424.	http://dx.doi.org/10.1103/PhysRevB.82.245424	2010	Hydrogen Loading
7	J. Penfold, E. Staples, I. Tucker, G. Fragnetto 'The effect of shear on the adsorption of non-ionic surfactants at the liquid-solid interface' <i>Physica B: Condensed Matter</i> 221 , (1996), 325-330.	http://dx.doi.org/10.1016/0921-4526(95)00945-0	1996	Shear

Sample Environment for Reflection

Seq. No.	Reference	Digital Source - DOI	Year	Technique
23	Christian Reich, Marion B. Hochrein, Bärbel Krause, Bert Nickel 'A microfluidic setup for studies of solid-liquid interfaces using x-ray reflectivity and fluorescence microscopy' <i>Rev. Sci. Instrum.</i> 76 , (2005), 095103.	http://dx.doi.org/10.1063/1.2040187	2005	Microfluidics
3	A. R. Rennie, R. J. Crawford, E. M. Lee, R. K. Thomas, T. L. Crowley, S. Roberts, M. S. Qureshi, R. W. Richards, 'The adsorption of polyethylene oxide at the air solution interface studied by neutron reflection' <i>Macromolecules</i> , 22 , (1989), 3466-3475.	http://dx.doi.org/10.1021/ma00198a044	1989	Air/Liquid
57	Adrian R. Rennie, Maja S. Hellsing, Eric Lindholm and Anders Olsson 'Note: Sample cells to investigate solid/liquid interfaces with neutrons' <i>Rev. Sci. Instrum.</i> 86 , (2015), 016115.	http://dx.doi.org/10.1063/1.4906518	2015	Solid/Liquid interface
35	Leslie A. Sasa, Eric J. Yearley, Cynthia F. Welch, Mark A. Taylor, Robert D. Gilbertson, Christopher Hammett, Jaroslaw Majewski, Rex P. Hjelm 'The Los Alamos Neutron Science Center neutron rheometer in the cone and plate geometry to examine tethered polymers/polymer melt interfaces via neutron reflectivity' <i>Rev. Sci. Instrum.</i> 81 , (2010), 055102.	http://dx.doi.org/10.1063/1.3381037	2010	Shear
60	Federica Sebastiani, Richard A. Campbell, Christian Pfrang 'Complementarity of neutron reflectometry and ellipsometry for the study of atmospheric reactions at the air-water interface' <i>RSC Adv.</i> , 5 , (2015), 107105.	http://dx.doi.org/10.1039/c5ra22725a	2015	Air/Liquid Environmental chamber
28	Surendra Singh, A. K. Poswal, S. K. Ghosh, Saibal Basu 'Scattering length density profile of Ni film under controlled corrosion: A study in neutron reflectometry' <i>Pramana - Journal of Physics</i> 71 , (2008), 1097-1101.	http://dx.doi.org/10.1007/s12043-008-0230-x	2008	Corrosion
58	Saurabh Singh, Ann Junghans, Erik Watkins, Yash Kapoor, Ryan Toomey, Jaroslaw Majewski 'Effects of Fluid Shear Stress on Polyelectrolyte Multilayers by Neutron Scattering Studies' <i>Langmuir</i> , (2015),	http://dx.doi.org/10.1021/acs.langmuir.5b00037	2015	Shear

Seq. No.	Reference	Digital Source - DOI	Year	Technique
63	Maximilian W. A. Skoda, Benjamin Thomas, Matthew Hageen, Federica Sebastiani, Christian Pfrang 'Simultaneous neutron reflectometry and infrared reflection absorption spectroscopy (IRRAS) study of mixed monolayer reactions at the air-water interface' <i>RSC Adv.</i> , 7 , (2017), 34208-34214.	http://dx.doi.org/10.1039/c7ra04900e	2017	IR spectroscopy
36	Hillary L. Smith, Joseph Hickey, Michael S. Jablin, Antoinette Trujillo, James P. Freyer, Jaroslaw Majewski 'Mouse Fibroblast Cell Adhesion Studied by Neutron Reflectometry' <i>Biophysical Journal</i> 98 , (2010), 793–799.	http://dx.doi.org/10.1016/j.bpj.2009.11.019	2010	Solid/liquid interface (living cells)
37	M. Strobl, R. Steitz, M. Kreuzer, A. Nawara, F. Mezei, M. Rose, P. Amitesh, M. Grunze, R. Dahint 'BioRef – a time-of-flight neutron reflectometer combined with in-situ infrared spectroscopy at the Helmholtz Centre Berlin' <i>J. Phys.: Conf. Ser.</i> 251 , (2010), 012059.	http://dx.doi.org/10.1088/1742-6596/251/1/012059	2010	ATR-FTIR
52	Paul D. Topham, Andrew Glidle, Daniel T. W. Toolan, Michael P. Weir, Maximilian W. A. Skoda, Robert Barker, Jonathan R. Howse 'The Relationship between Charge Density and Polyelectrolyte Brush Profile Using Simultaneous Neutron Reflectivity and In Situ Attenuated Total Internal Reflection FTIR' <i>Langmuir</i> , 29 , (2013), 6068-6076.	http://dx.doi.org/10.1021/la4005592	2013	ATR-FTIR
56	Z. Tun, J. J. Noël, D. W. Shoesmith 'Electrochemical Modification of the Passive Oxide Layer on a Ti Film Observed by In Situ Neutron Reflectometry' <i>Journal of The Electrochemical Society</i> , 146 , (1999), 988-994.	http://dx.doi.org/10.1149/1.1391710	1999	Electrochemical cell
49	P. Wang, A. H. Lerner, M. Taylor, J. K. Baldwin, R. K. Grubbs, J. Majewski, D. D. Hickmott 'High-pressure and high-temperature neutron reflectometry cell for solid-fluid interface studies' <i>Eur. Phys. J. Plus</i> (2012) 127 , 76	http://dx.doi.org/10.1140/epjp/i2012-12076-0	2012	High pressure
6	D. G. Wiesler, C. F. Majkrzak 'Neutron reflectometry studies of surface oxidation' <i>Physica B</i> , 198 , (1994), 181-186.	http://dx.doi.org/10.1016/0921-4526(94)90156-2	1994	Corrosion

Sample Environment for Reflection

Seq. No.	Reference	Digital Source - DOI	Year	Technique
21	Andrew J. Winn, Brian Derby, John R. P. Webster, Stephen Holt 'In Situ Characterization of Interfaces between Liquid Tin–Vanadium Alloys and Alumina by Neutron Reflection Spectroscopy' <i>J. Am. Ceram. Soc.</i> , 87 , (2004), 279-285.	http://dx.doi.org/10.1111/j.1551-2916.2004.00279.x	2004	High temperature
53	M. Wolff, P. Kuhns, G. Liesche, J. F. Ankner, J. F. Browning, P. Gutfreund 'Combined neutron reflectometry and rheology' <i>J. Appl. Cryst.</i> 46 , (2013), 1729-1733.	http://dx.doi.org/10.1107/S0021889813024059	2013	Shear - rheology
26	Kevin G. Yager, Oleh M. Tanchak, Christopher J. Barrett, Mike J. Watson, Helmut Fritzsche 'Temperature-controlled neutron reflectometry sample cell suitable for study of photoactive thin films' <i>Rev. Sci. Instrum.</i> 77 , (2006), 045106.	http://dx.doi.org/10.1063/1.2194090	2006	Optical
11	Hitoshi Yamaoka, Hideki Matsuoka, Keitaro Kago, Hitoshi Endo, John Eckelt, Ryuji Yoshitome 'Monolayer X-ray reflectometry at the air–water interface' <i>Chemical Physics Letters</i> 295 , (1998), 245-248.	http://dx.doi.org/10.1016/S0009-2614(98)00964-6	1998	Langmuir trough / X-ray
12	A. Zarbakhsh, J. Bowers, J. R. P. Webster, 'A new approach for measuring neutron reflection from a liquid/liquid interface' <i>Meas. Sci. Technol.</i> 10 , (1999), 738-743.	http://dx.doi.org/10.1088/0957-0233/10/8/309	1999	Liquid/liquid interface