Lists

F.1 Nomenclature

In the following subsections the symbols used in this thesis are given, with their dimensions if applicable, followed by a short description.

F.1.1 Symbols

A	-	critical power-law amplitude for the isochoric specific heat
A	$K \cdot W^{-1}$	apparent amplitude (see section 2.2.2)
B	-	critical power-law amplitude for the asymptotic shape of the coexistence curve
c_x	$J \cdot mol^{-1} \cdot K^{-1}$	specific heat at constant x
d	-	dimensionality of the system
D	-	critical power-law amplitude for the variation of the pressure with density along the critical isotherm
D_c	m	diameter of a cylinder (see section 5.3)
D_m	m	diameter of the circular marker (see section 5.3)
D_T	$m^2 \cdot s^{-1}$	thermal diffusivity
E	$s^{-1/2}$	system dependent constant (see section 2.3.2)
F	m	distance between image plane and film plane (see section 4.3.1)
g	$m \cdot s^{-2}$	acceleration of gravity
g_n	m^{-1}	average gradient (see section 4.3.1)
G	$s^{-1/2}$	system dependent constant (see section 2.3.1)
h	m	height
I	-	normalized temperature integral (see section 2.3)
j	$W \cdot m^{-2}$	heat flux
k	-	interference order

K_y	$m^2 \cdot N^{-1}$	compressibility at constant y
K_1	$mol \cdot m^{-4}$	fluid dependent parameter (see section 4.3.2)
K_2	$mol \cdot m^{-5}$	optics dependent parameter (see section 4.3.2)
L	m	path length of light in the sample
M	$kg \cdot mol^{-1}$	molar mass
M'	-	linear magnification (see section 4.3.1)
M	-	linear magnification in the film plane (see section 4.3.1)
n	-	refractive index
N	-	angular magnification (see section 4.3.1)
p	$N \cdot m^{-2}$	pressure
P	W	power
P	-	reduced meniscus position (see section 5.3)
P_m	-	reduced meniscus position (see section 5.3)
q	W	generated heat
$_f$	W	heat flow into the fluid (see section 2.2.2)
q_l	W	heat losses to the cell walls (see section 2.2.2)
Q	J	amount of heat
Q	$m^3 \cdot kg^{-1}$	Lorentz-Lorenz constant (see section 5.1)
Q_0	-	system dependent constant in the power-law description for the viscosity
R_a	-	Rayleigh number
R_D	-	universal amplitude (see section 2.1.3)
s	$J \cdot mol^{-1} \cdot K^{-1}$	entropy
S	m^2	surface area
t	s	time
t_c	s	characteristic time for isentropic equilibration (see section 2.2.2)
t_m	s	time after which the behaviour of the ‘shadow’ changes from type II into type I (see section 4.3.2)
T	K	temperature
T_{set}	K	set temperature of the thermostat (see section 3.1.2)
v	$m^3 \cdot mol^{-1}$	molar volume
V	m^3	fixed volume
x	m	spatial coordinate (in interferometry along the optical axis)
y	m	spatial coordinate (in interferometry perpendicular to the optical axis and parallel to the surface of the heater)
z	m	spatial coordinate along the direction of gravity (in interferometry perpendicular to the optical axis and to the surface of the heater)
Z_0	m	maximum size of the ‘shadow’ (see section 4.3.2)
$\tilde{x}$		reduced value of x
$\bar{x}$		Laplace transformed value of x
$\hat{x}$		difference from the initial value of x
x^*		reduced value of x
$\langle x \rangle$		average value of x

F.1.2 Greek symbols

α	-	critical power-law exponent
α_z	K^{-1}	thermal expansion coefficient at constant z
β	-	critical power-law exponent
γ	-	critical power-law exponent
Γ	-	critical power-law amplitude for the isothermal compressibility
δ	-	critical power-law exponent
Δ_T	-	reduced temperature lag (see section 2.3.1)
Δ_ρ	-	reduced excess density (see section 2.3.2)
ζ	-	critical power-law exponent
η	$N \cdot s \cdot m^{-2}$	viscosity
ϑ	rad	angle between light ray and heater surface (see section 4.2.2)
λ	$W \cdot m^{-1} \cdot K^{-1}$	thermal conductivity
Λ	m	laser light wavelength
μ	-	parameter (see section 2.3.1)
ν	-	critical power-law exponent
ξ	m	correlation length
ξ_0	m	critical power-law amplitude for the correlation length
ρ	$mol \cdot m^{-3}$	density
ρ_{CM}	$mol \cdot m^{-3}$	average of ρ_l and ρ_v - rule of Cailletet-Mathias (see section 5.3)
ρ_l	$mol \cdot m^{-3}$	liquid density
ρ_v	$mol \cdot m^{-3}$	vapour density
σ	-	thermal impedance ratio of a wall and the fluid (see section 2.2.2)
τ	-	reduced temperature difference
ϕ	-	reduced density difference
ψ	-	reduced pressure difference

F.1.3 Indices

a	apparent value (see section 6.2.3)
b	in the bulk of the fluid
c	critical value
eff	effective value
f	of the fluid
h	of the heater
i	of the ith wall
p	at constant pressure
s	at constant entropy
tot	the sum of all values
T	at constant temperature
v	at constant volume
w	of the wall

F.2 List of acronyms

AE	Adiabatic Effect
BPE	Bottom Peltier Element
BPL	Base Plate
CP	Critical Point
CPF	Critical Point Facility
CRESCENDO	Center for Remote SCience ENhancement by DUC Operations
CSS	Current Source System
DHS	Data Handling System
DUC	Dutch Utilization Center
EDE	Experiment Dedicated Equipment
EGSE	Electrical Ground Support Equipment
EOS	Equation of State
EPT	Experiment Parameter Table
ESA	European Space Agency
HEX	Heat Exchanger
IF	Interferometry
IFU	Interferometer Unit
IML-2	International Microgravity Laboratory #2
LDC	Linear Diode Camera
LED	Light Emitting Diode
NASA	National Aeronautics & Space Administration
NLR	Nationaal Lucht- en Ruimtevaartlaboratorium (National Aerospace Laboratory)
OIO	Optical Input and Output system
OTS	Outer Thermal Shield
PA	Parabolic Approximation
PCB	Printed Circuit Board
PE	Piston Effect
PMT	Photo Multiplier Tube
PWM	PulseWidth Modulated
SALS	Small Angle Light Scattering
SAMS	Space Acceleration Measurement System
SC	Sample Cell
SCU	Sample Cell Unit
SCUm	Sample Cell Unit monitoring thermistor
SCUr	Sample Cell Unit regulating thermistor
TCS	Thermal Control System
THU	Thermostat Unit
TNO	Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek
TNO TPD	TNO Technisch Physische Dienst
TPE	Top Peltier Element
TPL	Top Plate
VSS	Voltage Source System

VWZI Van der Waals-Zeeman Instituut
WALS Wide Angle Light Scattering

F.3 List of tables

F.4 List of figures