



SCIENTIFIC EQUIPMENTS AT CMFRI



CENTRAL MARINE FISHERIES RESEARCH INSTITUTE
(Indian Council of Agricultural Research)
Kochi - 682 018, India

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Central Marine Fisheries Research Institute

(Indian Council of Agricultural Research)

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INTRODUCTION

The Central Marine Fisheries Research Institute, a pioneering Institute in the field of marine fisheries, established by Government of India in 1947, was brought under Indian Council of Agricultural Research in 1967. The Institute has built up state of the art laboratory facilities to carry out research programmes to meet the changing requirements and challenging issues in marine fisheries research. However it is felt that the equipments available at Headquarters as well as at Regional/Research Centres can be fully utilised if information about them is made available to all the needy staff. The present compilation fullfills this long felt need.

This publication entitled 'Scientific Equipments at CMFRI' is brought out with a view to provide comprehensive information about the equipment facilities available in the Institute comprising details regarding the model, specification and application with photographs. All the important instruments in the Headquarters are brought under a Central Instrumentation Laboratory(CIL) to facilitate easy access to these instruments to all the scientists, students and research scholars. Certain facility like the Transmission-cum Scanning Electron Microscope installed in Headquarters to investigate fine and ultrastructural details of marine organisms is open to scientists and students from other Institutes also.

The equipments available in the CIL and with each divisions at headquarters are given in alphabetic order in part I of the publication. Those equipments available at the Regional/Research centres are given separately in part II. Centrewise/itemwise list is also presented in alphabetic order. Index of the equipments with place of availability and page number are given at the end for easy reference

It is expected that this brochure will be beneficial for all the users within the Institute as well as to those who wish to avail this facility for pursuing their research. Further, this information will also facilitate a better utilisation of the scientific equipments possessed by the Institute.

Part - I Headquarters (Kochi)

CENTRAL INSTRUMENTATION LABORATORY (CIL)

Automatic Tissue Processor

Make/Model : Leica, TP 1020
Application : Processing of tissue samples for histological analysis



Cryomicrotome

Make/Model : Leica, CM 1100
Temp range : 0 °C to -30 °C
Section thickness : 0-20 μ m
Application : Rapid freezing and manual sectioning of tissue specimens

Gas Chromatograph (GC)

Make/Model : Perkin Elmer, AutoSystem XL
FID Detector
100 m Capillary column
Application : Analysis of fatty acids



High Performance Liquid Chromatograph (HPLC)



Make/Model : Waters, USA
with 2487 dual λ absorbance detector
1525 Binary pumps
Pico-Tag column

Application : Analysis of Amino acids

High Speed Refrigerated Centrifuge

Make/Model : Hitachi, CR 21 G
with R-21 fixed angle rotor
RPM : 25,000



Ice Flaker

Make/Model : Pooja

Microscope

Make/Model : Leica, DMLB 2

Compound microscope
with Phase contrast and
Fluorescence attachment
Image analysing software



Microscope

Make/Model : Leica, S8 APO

Stereo-zoom microscope

Semi-automatic Microtome

Make/Model : Leica, RM 2145

Section
thickness : 0.25-60 μ m

Application : Sectioning of tissue samples for
histological studies





Semi-micro Calorimeter

Make/Model : Parr, 6725, USA

Application : Determination of heats of combustion of solid or liquid samples liberating heat upto 1200 calories when burnt in oxygen

Spectrophotometer (UV/Vis)

Make/Model : Thermo Spectronic, Genesys-5

Split beam optics for stability and light throughput

Built-in software for scanning, standard curve, kinetics, multiwave length



Spectrophotometer (UV/Vis)

Make/Model : Thermo Spectronic, Genesys -10

Dual source tungsten and deuterium lamp system for maximum performance over the entire wave length range

Spectrophotometer (UV/Vis)

Make/Model : Hitachi, U-2010



Transmission Electron Microscope

Make/Model : Hitachi, H 600
with H6010 A Scanning attachment

Magnification : SEM 1 Lakh
TEM 3 Lakhs
with Ultra-microtome, Sputter Coater, Critical Point Dryer
Knife Maker

Ultra-low Temperature Freezer

Make/Model : Sanyo
-85°C





Voltammetric Trace Analyser

Make/Model : Metrohm, 757, Switzerland

Application : Analysis of heavy metals
in water samples

Water Purification System

Make/Model : Millipore, Milli-Q Synthesis A10
water purification system
supplying Elix 3 and
Milli - Q water

Flow rate : 0.8-1.2 lpm

Resistivity : 18-18.2 m Ω cm

TOC : Max 5 ppb



CRUSTACEAN FISHERIES DIVISION (CFD)



Fish Aging Equipment

Make/Model : Buehler, Canada

Application : Otolith studies of fishes

Microscope

Make/Model : Motic, BA 210

Compound microscope
with inbuilt camera and
image analyser



Shaking Incubator

Make/Model : Labline, India

DEMERSAL FISHERIES DIVISION (DFD)

Microscope

Make/Model : Carl Zeiss, Stemi 2000

Stereo-zoom microscope



FISHERY ENVIRONMENT MANAGEMENT DIVISION (FEMD)



Atomic Absorption Spectrophotometer

Make/Model : Perkin Elmer, AAnalyst 700

Application : Analysis (quantitative) of metals in sediments and tissue

Automatic Grainsize Analyser

Make/Model : Fritsch, Germany



Microscope

Make/Model : Leica, MZ6

Stereo-zoom microscope

Microscope

Make/Model : Leica, S6 D

Stereo-zoom microscope



Microscope

Make/Model : Leica, DM 500

Compound microscope

Microwave Digestion System

Make/Model : Milestone, Start D

Application : Digesting tissue and sediment samples





Muffle Furnace

Make/Model : Therm Concept
Electronic Muffle Furnace

MARICULTURE DIVISION (MD)

Fluorescence Spectrophotometer

Make/Model : Varian, USA



Laminar Air Flow

Make/Model : Labline

Microscope

Make/Model : Carl Zeiss, Axioskop 40

Compound microscope
with camera attachment



Microscope

Make/Model : Leica, DMIL

Inverted microscope

PCR Thermocycler

Make/Model : Long Gene, MG96plus

Peltier Thermal Cycler





UV Transilluminator

Make/Model : UVP
Bio Doc -It, Imaging System

MARINE BIODIVERSITY DIVISION (MBD)

Microscope

Make/Model : Carl Zeiss, Axioskop 40
Compound microscope
with camera attachment



Microscope

Make/Model : Leica, S8 APO
Stereo-zoom microscope



MARINE BIOTECHNOLOGY DIVISION (MBTD)

Biophotometer

Make/Model : Eppendorf
Application : Quantitative estimation of biomolecules



CO₂ Incubator

Make/Model : Nuair, US Auto Flow
Application : Cell culture work

Column Chromatography System

Make/Model : Biotage, Sweden
Application : High-throughput purification of bioactive molecules





Electrophoresis Unit

Make/Model : Hoefer

Application : Analysing biomolecules viz. protein and DNA/RNA

Electroporator

Make/Model : BTX, ECM 630, USA

Application : Electroporetic transfer of genes



ELISA Plate Reader

Make/Model : Varian, 50MPR, USA

Fluorescence Spectrophotometer

Make/Model : Varian, USA

Application : Spectroscopic analysis of biological materials/extracts/ purified molecules



Gel Documentation System

Make/Model : Biorad, Gel-Doc XR+

High Performance Liquid Chromatograph (HPLC)

Make/Model : Shimadzu, Japan

Application : Chromatographic characterisation of semipurified / purified fraction (s) / molecules





Hybridisation Oven

Make/Model : Labnet

Kjeltec, Soxtec, Fibertec Digestion System

Make/Model : FOSS, USA

Application : Analysis of crude fat, fiber and protein in biological materials



Laminar Air Flow

Make/Model : Labline

Application : Cell culture work

Lyophiliser

Make/Model : Martin Christ,
Alpha 1- 4 LD plus,
Germany

Application : Freeze drying of thermolabile
biomolecules and water
based extracts for
bioprospecting



Microscope

Make/Model : Leica, DMLS

Compound microscope
with image analysing
software

Microscope

Make/Model : Nikon, TS 100
Inverted microscope

Application : Cell culture work





Microscope

Make/Model : Nikon, SMZ 1000
Stereo-zoom microscope

Microscope

Make/Model : Nikon, ECLIPSE 80i
Compound microscope



Muffle Furnace

Make/Model : Labline
Application : Ashing biological materials

Orbital Shaker

Make/Model : Labline

Applications : Initial processing of samples
for bioprospecting /
microbiological applications



PCR Thermocycler

Make/Model : ABI, Veriti

Application : Genomics and
Biotechnological studies

Realtime PCR Thermocycler

Make/Model : Biorad, iQ5

Application : Quantification of PCR
products while amplification





Refrigerated Centrifuge

- Make/Model : PlastoCrafts, Superspin R
- RPM : 50 ml rotor (8500 rpm)
1.5 ml - 2 ml (9500 rpm)
- Temperature : 4 °C to ambient
- Application : Preliminary processing of crude extracts from various sources for analytical use/bioprospecting

Refrigerated Incubator

- Make/Model : Barnstead, 3550-1A
- Application : Cell culture work



Refrigerated Shaking Incubator

- Make/Model : Barnstead, MaxQ mini 4450
- Application : Cell culture work

Rotary Vacuum Evaporator

Make/Model : Heidolph, Germany
Application : Concentrating crude extracts of biological materials for use in bioprospecting



Shaking Incubator

Make/Model : Labline
Application : Incubating microorganisms/ submerged fermentation

Shaking Waterbath

Make/Model : Barnstead, MaxQ 7000





Spectrophotometer (UV/Vis)

Make/Model : Varian, 50Bio, USA

Application : Spectroscopic analysis of biomolecules/extracts

Twin-screw Extruder

Make/Model : HTPL, Kolkatta

Horizontal and vertical

Application : Aquafeed preparation



Ultra-sonicator

Make/Model : Elma

Application : Degassing organic solvents for chromatography

Ultra-low Temperature Freezer

Make/Model : New Brunswick Scientific ;
Thermo Scientific, Forma 700 series
-80° C



MOLLUSCAN FISHERIES DIVISION (MFD)



Circulating Bath with Digital Controller

Make/Model : Brookfield Temp. Cont.,
TC-602
Temperature range : -20 °C to 150 °C

Current Profiler

Make/Model : Nortek, Aquadopp, Norway
Application : Oceanic current
measurement





Fluorometer

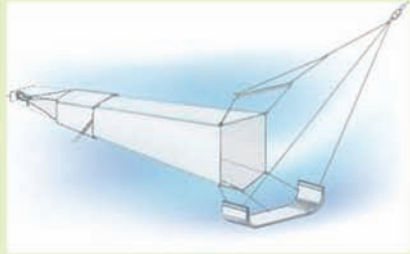
Make/Model : YSI Inc., 6600V2-03, USA

Issacs-kidd Midwater Trawl

Make/Model : Open Sea Inst. Inc.,
Canada

2.5 sq m mouth

Application : Catching small organisms
at depths of 300-1000 m



Microscope

Make/Model : Carl Zeiss, Axiostar

Compound microscope

Microscope

Make/Model : Leica, DM 2000B
Compound microscope



Microscope

Make/Model : Leica, DM 500
Compound microscope

Night Vision Binocular

Make/Model : N FORCE, DVS-8





Plankton Net

Make/Model : KC, WP-2 Net, Denmark
with digital flow meter

Mesh Size : 200 μ
monodur nylon net
Nansen release mechanism (heavy duty
version) for operating / closing plankton
net by a 0.8 kg drop messenger

PCR Thermocycler

Make/Model : Applied Biosystems,
Veriti 96, USA



Remote Operated Vehicle

Make/Model : Sea botix Inc.,
BV 300 SE, USA

Spectrophotometer (UV/Vis)

Make/Model : Thermo Spectronic,
Genesys-5

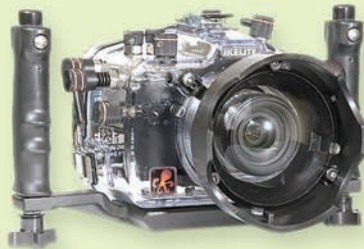


Squid Jigging Machinery

Make/Model : Everfish Corp., Korea

Underwater Camera

Make/Model : Nikon, D90 camera
with underwater
casing IKEL ITE





Underway CTD

Make/Model : Ocean science, USA
UCTD

Application : Continuous profiling without changing ship speed for measuring conductivity, temperature and depth upto 600 m

PELAGIC FISHERIES DIVISION (PFD)

Microscope

Make/Model : Motic, BA 310

Compound microscope with Motic advance plus software



Microscope

Make/Model : Leica, DM 2000

Compound microscope with image analysing software

Part - II Regional / Research Centres

REGIONAL CENTRE, MANDAPAM

High Performance Liquid Chromatograph (HPLC)

Make/Model : Shimadzu, Japan
Application : Nutrient profiling, product
isolation, purification
(analytical)



Microscope

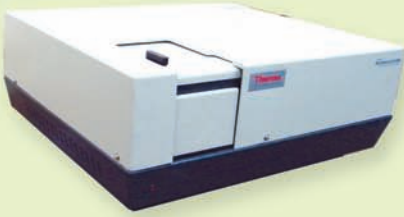
Make/Model : Stemi, 2000 C
Stereo-zoom microscope

REGIONAL CENTRE, VERAVAL

Microscope

Make/Model : Cole Parmer
Stereo-zoom microscope





Spectrophotometer (UV/Vis)

Make/Model : Thermo Fisher

REGIONAL CENTRE, VISAKHAPATNAM

Spectrophotometer (UV/Vis)

Make /Model : Thermo Spectronic, USA
Genesys-5



Semi-micro Calorimeter

Make/Model : Parr, USA

Application : Energetic studies

Water Quality Parameter Kit

Make/Model : Eutech Instruments,
Cyberscan
water proof series
hand held series
conductivity meter



RESEARCH CENTRE, CALICUT



Microscope

Make/Model : Motic, DM 143
Stereo-zoom microscope
with digital camera, moticam

Water Disinfectant System

Make /Model : Aquoin
UV sterilizer
UV Monitor-UVM-700

RESEARCH CENTRE, CHENNAI



Spectrophotometer (UV/Vis)

Make/Model : Thermo electronic Corp.,
Spectronic

Nicolet evolution,
10 ml cuvette, multiple PC

Microscope

Make/Model : Carl Zeiss, AxioStar
Compound microscope



Microscope

Make/Model : Carl Zeiss, Stemi 2000C
Stereo-zoom microscope

RESEARCH CENTRE, KARWAR

Microscope

Make/Model : Motic, B-1 90903254
Compound microscope



PCR Thermocycler

Make/Model : Eppendorf

Master cycler apparatus with power pack, electrophoretic unit and UV transilluminator

RESEARCH CENTRE, MANGALORE

Atomic Absorption Spectrophotometer

Make/Model : Varian
Application : Analysis of heavy metals





Gas Chromatograph with MS

Make/Model : Shimadzu, Japan

Application : Analysis of pesticides and hydrocarbons in water samples

Ion Chromatograph

Make/Model : Metrohm, Switzerland

Application : Analysis of water samples for anions and cations



Microscope

Make /Model : Olympus, Japan

Compound microscope

Voltametric Trace Analyser

Make/Model : Metrohm, Switzerland

Application : Analysis of heavy metals in water samples



Spectrophotometer (UV/Vis)

Make/Model : Thermo Electronic Corp.

RESEARCH CENTRE, MUMBAI

GIS Workstation with Software

Make/Model : Detamini



Laptop for field work, Umax A3 Scanner, Colour Laser jet 25150 L printer, HP Design jet 500, GIS Software, Hand held GPS

Application : The facility with advanced graphic card is being used to generate advance imagery, graphic geo-coordination and geo-referencing.

RESEARCH CENTRE, TUTICORIN



Atomic Absorption Spectrophotometer

Make/Model : GBC, 932 plus

Application : Estimation of heavy metals

CO₂ Incubator

Make/Model : Forma

Application : Cell culture studies



Cryomicrotome

Make/Model: Leica, CM 1850

Centrifugal Ball Mill

Make/Model : Retsch GmbH & Co,
Germany



Laminar Air Flow

Make/Model : Clean Air Systems
Application : Cell culture work

Lyophiliser

Make/Model : LXO LAB 3000/CI 110
system
Heto Freeze Dryer





Mercury Analyser

Make/Model : ECIL, MA 5840

Microscope

Make/Model : Carl Zeiss, AxioStar plus

Compound microscope
with fluorescence attachment
and photomicrographic unit



Microscope

Make/Model : Nikon, TMS

Inverted microscope

Microscope

Make/Model : Magnus (Olympus),
MLXTR
Compound microscope



Rotary Vacuum Evaporator

Make/Model : Heidolph, Laborata 40001/
WB/GI

Spectrophotometer (UV/Vis)

Make/Model : Thermo Spectronic,
Genesys-10





Spectrophotometer (UV/Vis)

Make/Model : Thermo Spectronic
Genesys-5

Underwater Camera

Make/Model : Nikonas

Underwater still camera



Ultra-centrifuge

Make/Model : Sorvall
RPM 80,000

RESEARCH CENTRE, VIZHINJAM

Microscope

Make/Model : Leica, DMLS

Compound microscope
with DFC 295 camera



Spectrophotometer (UV/Vis)

Make/Model : Varian, Cary 100 Bio

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