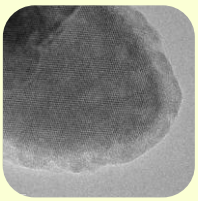
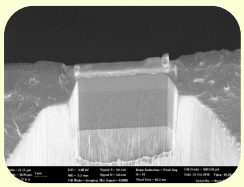
INTERNATIONAL ADVANCED RESEARCH CENTRE FOR POWDER METALLURGY AND NEW MATERIALS (ARCI)

(An autonomous R&D Centre of Department of Science and Technology, Govt. of India)

CENTRE FOR MATERIALS CHARACTERIZATION AND TESTING (CMCT)



Amorphous C on LiFeP



Multi-layer X-section

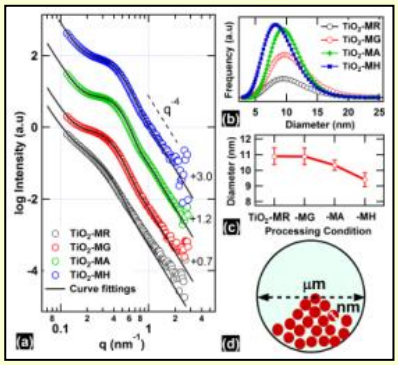
Characterization

Structural
- Residual stress
- X-ray diffraction
- Micro-XRD

Microstructural
- TEM , SAXS
- Dual Beam FIB-SEM
- FE-SEM / EBSD / EDS, SEM

Mechanical
- Nano-tribiology (Scratch, Impact and Indentation)
- Creep and UTM (RT & HT)
- Macro/Micro Hardness

Electrochemical
- Impedance testing and Electrochemical analysis
- Cyclic corrosion



SAXS profiles of nano-TiO_2

OBJECTIVES OF THE CENTRE
- Offer a range of solutions for internal characterization needs
- Conduct basic research to support ARCI's technology development programmes
- Carry out multi-scale, multi property characterization for R&D laboratories, industries and academic Institutions in project mode

CORE STRENGTHS
- Competent team to perform Structure-Property correlations
- State of art characterization tools to probe different types of materials such as metals, alloys and ceramics, covering all length scales (bulk, coatings and nanomaterials)
- Advanced Micromechanical testing facilities
- Comprehensive electrochemical characterization for testing materials for battery, solar cell, and other applications

Characterization facilities

Microscopy
Transmission electron microscope
Field Emission SEM with EBSD
Dual beam FIB-SEM
Conventional SEM with EDS
Optical microscopy

X-ray
Small angle X-ray scattering
X-ray diffraction
Micro-diffraction
Residual stress

Mechanical testing
Nano-tribology
Creep testing
Tensile and compression testing
Indentation testing (nano/micro)

Electrochemistry
Electrochemical analysis
Cyclic corrosion testing facility

Sample preparation
Metallography
Vibratory polishing
Multi-prep
Argon ion polishing (PIPS)
Twin-jet electropolishing
Dimple and disc grinders
Ultrasonic and mechanical disc punches for TEM specimens

Major facilities

TEM

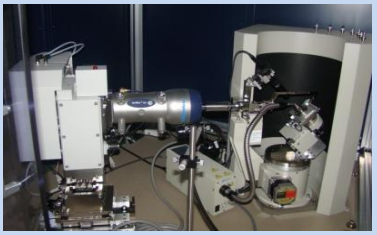
SAXS

UTM

Residual stress

Dual beam

Nanomechanical testing system



Micro-XRD

Electrochemical

Electrochemical workstation

Cyclic corrosion chamber

Optical microscopy & metallography

Optical microscope & micro hardness tester

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