

## Performance Targets planned for 2021-2022

Sl.	Objectives	Planned
1.	External Cash Flow (ECF)*	25.0 Crores
2.	Industrial ECF (a part of ECF)	20.0 Crores
3.	ECF from Private organization including testing activity (a part of Industrial ECF)	7.0 Crores
4.	Customer Satisfaction Index	4.8
5.	SCI Publications (no.)	124
6.	Patents (no.)	25
7.	Copyrights (no.)	5
8.	Technologies to be Developed (no.)	5
9.	Technologies to be Transferred (no.)	5

### Major Technological & Scientific targets Planned for 2020-2021

#### Advanced Materials Processing

##### Technology:

1. FOBOP: Fiber Optic based Break Out Prediction technology for Billet Caster
2. IoT based system for health assessment of blowpipe to avoid sudden failure
3. Improved corrosion resistance of the developed zinc and magnesium alloy as bio-implant for practical application.
4. Improve the purity of  $Ti_3AlC_2$  (MAX) to >95% with an indigenous process

Technology Transfer : 04

Patents : 07

Publications : 25

#### Materials Extraction & Recycling

- Preparation of BEP for Li extraction on 1 kg scale from end-of-life batteries
- Production of 50 tons of briquette and supply to FSNL for carrying out trials at Bhilai Steel Plant
- Development of geopolymers cement for immobilization of radioactive waste. Preparation of cylinder samples of 100 kg and supply to BARC for evaluation.

#### Materials Evaluation

- Benchmark data generation for HCF and LCF for Ni base alloys
- Rejuvenation of Gas collector for Indian Navy

### Minerals Processing

#### 1. Industrial projects:

- Pilot Scale beneficiation and agglomeration of dolomite concentrates (Tata Steel), Rs. 25 lakh
- Effective utilization of middlings and fines of Coking coal washery for recovery of carbon values (Coal India Ltd.), Duration: 02 Years, Rs. 0.63 Lakh (for first year)

#### 2. CSIR Funded Mission project: Duration: 02 Years, Around 0.80 Cr

- Development of process for production of high purity (>99.9%) silica concentrate and metallic silicon from natural silica sand/quartzite for catalyst and electronic applications (CSIR-Silicon Mission Project)

#### 3. Proposal sent to BCCL for future activities

- Development of the novel gravity based beneficiation scheme for coal preparation which includes gravity separator such Spiral, MGS and compare the separation performance with exiting scheme

#### 4. Studies on feasibility of low grade iron ore dry beneficiation using controlled air fluidization

### Analytical and Applied Chemistry

#### 1. Industrial Sponsored Project

Band by band coal core chemical characterization will be carried out for geo-chemical mapping of coal mines sponsored by CMPDIL, Ranchi.

#### 2. Coal India Sponsored Project

Lab Scale Study on Reducing Ash Content (Mineral Matter) from Washery Grade Coking Coal (Grade III-VI) and High Ash Non-Coking Coal Through Oil Agglomeration

#### 3. Referee sample analysis of Coal challenged by different coal industries

#### 4. Self-healing Anti-corrosion Coating for Steel

CSIR-NML has recently developed self-healing coating for corrosion protection of steel. The coating prevents corrosion of steel even after formation of scratch or cut in the coating. The scratch self-heals in presence of water and prevents corrosion. The coating passes 1000 hours of salt spray test after breakage of coating. The coating can be applied by brushing or spraying and it is suitable for onsite application.

Rare earth and trace element analysis of sediment & rock samples supplied by Geological Survey of India.

### NML-Madras Centre

- Installation and Commissioning of 200 tonnes per day flotation column for fine coal flotation at Belatinda Coal Preparation Plant of M/s Tata Steel Ltd.
- Industry (plant) scale trials (5 tonnes per hour) of newly developed environment friendly flotation reagent for sillimanite at M/s Kerala Minerals and Metals Ltd., Kerala