Major Research Facilities

Facility	Make/Model
All Common Facilities of the Centre are used by AKR group for details see the link www.bose.res.in/~technicalcell	
Special sophisticated experimental facilities in AKR group	
1. Low frequency noise measurement (temperature variable) down to a noise floor of $10^{-21} V^2/Hz$ and with variable temperature facility down to 77K	Assembled around lock-in amplifier can measure resistances down to nanoohm. This has a special soft-ware written by the group. It is very rare facility in the country
2. 1.5K, 10T GM cycle based system for transport, magnetic and dielectric measurements.	The measurement system (fully automated) has been assembled around the cryostat by the group along with the necessary software
3. Photo-conductivity measurements	Measurements of Photoconductivity in nanowires and films are done in a home made apparatus that uses a small UV source. A variable frequency measurement set-up built around a monochromator has been innovated around the PL set-up of the central facility.
4.UHV temperature variable Scanning probe microscope with magnetic field.	The RHK UHV temperature variable SPM is a combination of Scanning Tunneling Microscope (STM) and Atomic Force Microscope (AFM) which works in a UHV atmosphere of better than 10^{-10} torr and can span a temperature range from 30K to 800K.
5. Potentiostat and Electrochemical deposition unit	CHI- This unit is widely used for synthesizing metal nanowires in nanoporous templates using electrochemical deposition
6. Wet-chemical laboratory including sample heat treatments upto 1300C	AKR group uses extensive chemical routes for sample preparation. Almost all the samples used in the experimental work are synthesized in-house by AKR group.
Facilities in the clean room	

AKR group has a dedicated clean room facility (class 1000+) that is used in its nanofabrication work. The facility houses a combination of optical lithography, electron-beam facility and focused ion beam nanolithography tools that allows extensive nanodevice fabrication. At present the group can fabricate devices based on single nanowires with diameter as low as 20nm or create patterns using the focused ion beams with feature sizes down to 20nm	
Helios 600 dual beam machine	This machine is a combination of focused ion beam (FIB) , electron beam (FEG-SEM) and localized precursor based deposition unit. The ion beam and electron beam writing as well as metal deposition can be done using a CAD based pattern generator . The machine is extensively used for lift-off based nanolithography and allows sub-100nm pattern creation
Mask – aligner (EMA-400)	The mask-aligner is used for optical lithography work for pattern generations down to 5μm.
ICP-RIE Plasma etching unit SENTECH 500	Under installation
UHV metallization unit SVT	Under installation