FUNDED & ESTABLISHED BY

MINISTRY OF ELECTRONICS AND INFORMATION TECHNOLOGY

iTNT TAMILNADU TECHNOLOGY HUB

Thiagarajar College of Engineering — Since 1957 — where quality and ethics matter

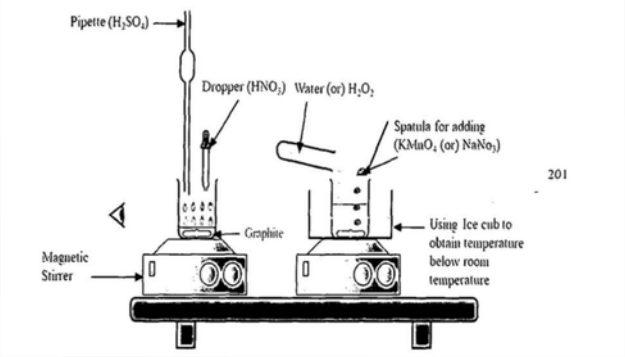
SYNTHESIS OF GRAPHENE USING MODIFIED CHEMICAL REDUCTION METHOD

Seeking parties interested in licensing and commercialization of technology.

Technology Brief

This technology discloses an advanced modified chemical reduction method for synthesizing high-quality graphene from graphene oxide (GO) while preserving essential functional groups and structural integrity. Unlike conventional reduction processes that completely strip critical oxygen moieties, this tailored chemical technique controls the reduction state to maintain vital functional groups such as hydroxyl, epoxy, and alkoxy groups, along with a precise interlayer spacing of 3.35 Å and an optimal carbon-to-oxygen (C/O) ratio. The resulting modified graphene exhibits enhanced dispersibility, structural stability, and surface reactivity, providing an efficient and scalable chemical route for high-performance nanomaterial synthesis.

Block Diagram



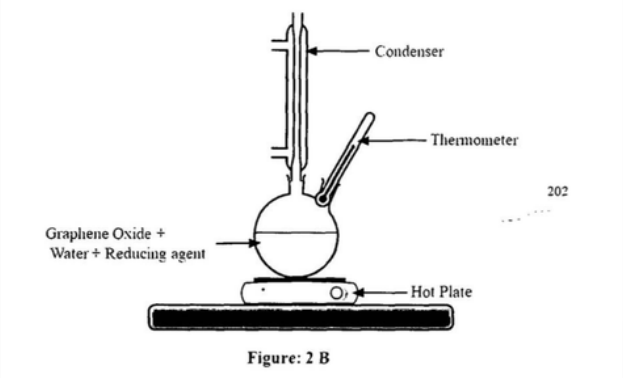


Figure: 2 B

Technical Applications

The functionalized graphene produced by this modified reduction method is ideally suited for energy storage systems, including high-capacity lithium-ion battery anodes, supercapacitors, and conductive electrode additives. Additionally, its preserved functional groups and high C/O ratio make it highly suitable for nanocomposite materials, conductive coatings, electrochemical biosensors, microelectronics, and environmental purification membranes.

Salient Features

- Preservation of Critical Functional Groups
- Controlled Interlayer Spacing
- Scalable Chemical Synthesis

Glimpse of the Technology

REFERENCE NUMBER
iTNT-TECH-0198

TECHNOLOGY SECTOR
Clean Energy & Sustainability

IP STATUS
Patent Granted

APPLICATION NUMBER
202141028545

TECHNOLOGY READINESS LEVEL
TRL 3

Tamil Nadu Technology Transfer Facilitation Centre (TNTTFC)

Mr. G. Daniel Prabhakaran, RTTP
Associate Vice President - iTNT

tnttfc@tnthub.org

+91 91766 08820

https://techtransfer.itnthub.tn.gov.in/