BSI

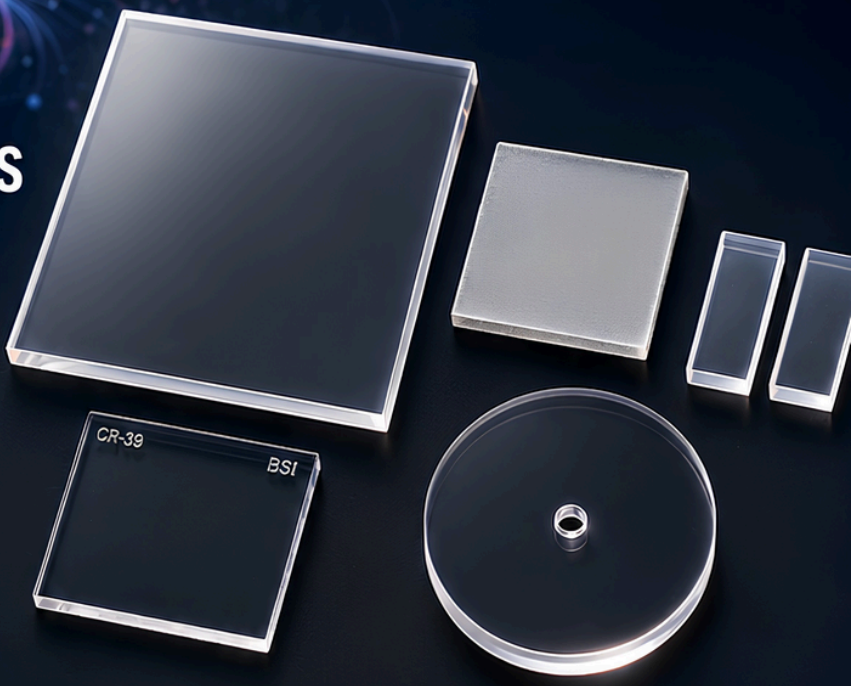
TEXAS TECH UNIVERSITY SPINOUT

CR-39

NUCLEAR TRACK DETECTORS

The Only U.S.-Manufactured Nuclear-Grade CR-39.

Custom geometries and expert consultation for the world's most demanding nuclear detection and radiation measurement challenges.



Only U.S. Manufacturer
Nuclear detection-grade CR-39, made in America.

Custom Geometries
Any shape, 500 µm to 3 mm thick.

Detection Expertise
Decades of nuclear physics.
Full consulting and analysis services.

TRACK-LEVEL PRECISION. AI-POWERED INSIGHT.

A modern, AI-enhanced platform for nuclear detection, dosimetry, and particle track analysis.

NUCLEAR & PLASMA DIAGNOSTICS

From Fusion Plasmas to Fundamental Research

Passive, integrating detection with 1:1 correspondence between incident ions and recorded tracks. Ideal where electronic detectors cannot fit, cannot survive, or cannot resolve the signal.

Plasma & Fusion Diagnostics
Characterize ion populations, measure yields, and map spatial distributions in fusion and plasma experiments.

Low-Yield & High-Background Experiments
Ideal for experiments where signal-to-noise defeats electronic methods. Every track is a real particle event.

Ion Spectrometry & Differentiation
Resolve particle species, measure energies, and determine source strengths from track morphology and depth profiles.

RADIATION SAFETY & DOSIMETRY

Protecting People from the Lab to Low Earth Orbit

Compact, powerless, and radiation-hard. The ideal passive dosimeter for environments where electronics fail.

Personnel & Area Dosimetry
Neutron and charged-particle dosimetry for reactor facilities, accelerator labs, and medical environments.

Aerospace & Flight Dosimetry
Cumulative dose monitoring for flight crews, spacecraft, and high-altitude research with no power or telemetry required.

Radon Detection
Proven track-etch method for residential and occupational radon exposure assessment.

ENGINEERED FOR DISCOVERY.
From fusion plasmas to flight decks.

DESIGNED AND BUILT IN THE USA

YOUR GOAL IS OUR MISSION

LEARN MORE
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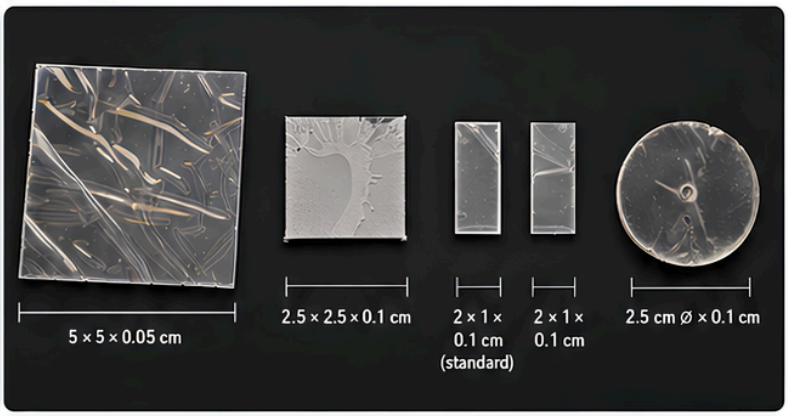
SHIPS INTERNATIONALLY

BSI CR-39 TECHNICAL CAPABILITIES

Custom Manufacturing + SEM/AI Track Analysis

CUSTOM CR-39 MANUFACTURING



Custom geometries from 500 µm to 3 cm thickness.

Circles, rectangles, squares, and custom shapes available.

R&D partnerships available for ultra-thin (<500 µm) sheets.

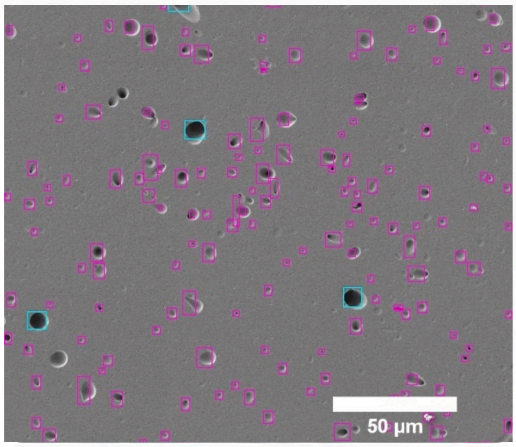
WHY CR-39?

Cost-Effective	From $2/piece, orders of magnitude cheaper than electronic detector setups.
Compact Form Factor	Fits where traditional detectors cannot, inside target chambers, behind shielding, or personnel.
Time-Integrating	Accumulates signal over entire exposure period, no trigger, no dead time, no data loss.
1:1 Track Fidelity	Each incident ion produces exactly one track equal to the ion.
Fully Passive	No power, no electronics, no cabling to deploy and retrieve.
EMI & Field Immune	Unaffected by magnetic fields, RF interference, or radiation damage to electronics.
Radiation Hard	Operates in high-flux environments that would saturate or damage electronic detectors.
Multi-Particle Capable	Detects alphas, protons, heavy ions, fission fragments, and neutrons (with BN coating).

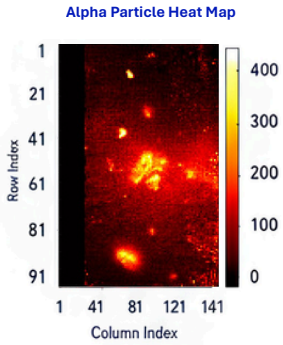
SEM + AI TRACK ANALYSIS

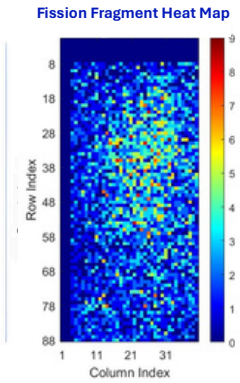
From Raw Detector to Quantitative Data

Ship your exposed CR-39 back to BSI for automated scanning electron microscope imaging and AI-powered track analysis. Our deep learning pipeline, trained on tens of thousands of particle tracks, delivers publication-quality quantitative results with fast turnaround.



AI-detected particle tracks on etched CR-39. Cyan boxes indicate fission fragments; magenta boxes indicate 14 MeV neutron background.





Spatial density maps generated from AI track analysis - alpha particles and fission fragments

Particle Counting
Automated total track counts across scanned areas with spatial binning.

Particle Identification
Classify tracks by particle type based on morphology.

Energy Estimation
Approximate incident particle energy from track diameter and depth profiles.

Angular Reconstruction
Determine particle arrival angles from track ellipticity and asymmetry.

Spatial Density Mapping
Generate heatmaps showing track density variations across the detector surface.

RELATED PAPERS

AI Track Analysis on CR-39
D'Amico et al.,
Nuclear Engineering and Technology (2025)
10.1016/j.net.2025.103738

BN-Coated CR-39 for Neutron Detection
D'Amico et al.,
Nuclear Engineering and Technology (2025)
10.1016/j.net.2025.104027

Full-service analysis or consultation only we work with you either way. Academic collaboration and co-authorship partnerships available.

Standard CR-39
From **$2** / piece
Standard 2 × 1 × 0.1 cm.
Custom sizes from $1/cm².
Bulk discounts on 100+ units.

BN-Coated CR-39
From **$6** / piece
Boron nitride coating on any geometry,
10× faster neutron efficiency,
100×+ thermal neutron efficiency.

SEM + AI Analysis
From **$175** / 0.2 cm²
Pricing varies with scan area and analysis parameters.
Contact for a quote.

All CR-39 manufactured in Lubbock, TX. International shipping available. Contact us for custom requirements.

Active collaborations spanning national defense laboratories, university research groups, private fusion companies, and aerospace medical programs across the U.S., Canada, Europe, and Africa.

ENGINEERED FOR DISCOVERY.

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