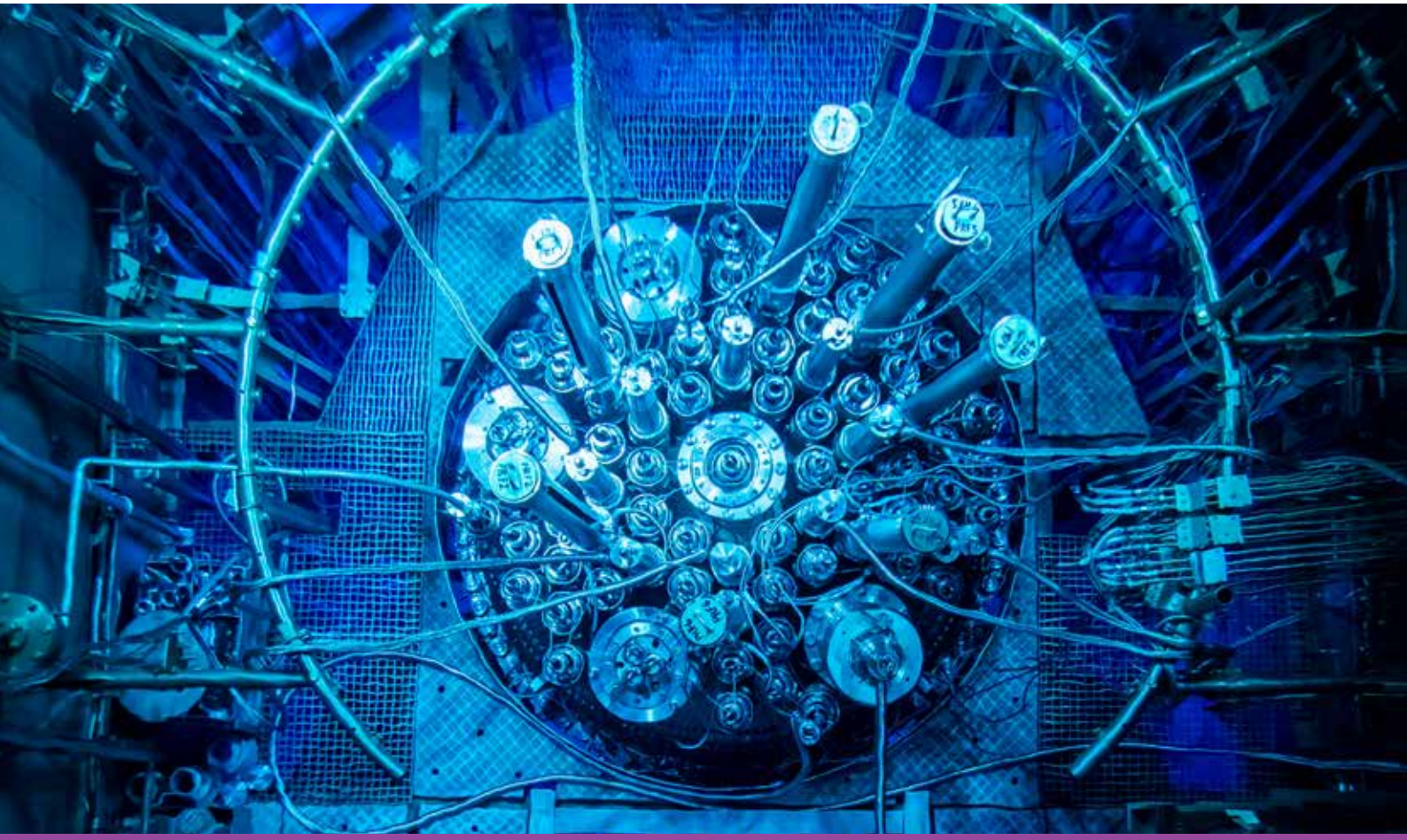
sck cen

Belgian Nuclear Research Centre



Your partner

for a very broad spectrum of irradiation conditions

www.sckcen.be

business@sckcen.be

Neutron irradiations: BR2

Fluxes at 60 MW reactor power (typical value, configuration dependent); reactor power up to 120 MW possible.
Various temperatures and environments (gas, water,…) possible, depending on the rig.
Fuel height 760 mm; flux gradient < 20% over about 350 mm.
Very flexible core configuration, with up to 79 available channels for experimental rigs.

	thermal neutron flux (n/cm^2s)	fast neutron flux (>1MeV) (n/cm^2s)	gamma heating rate (W/g Al)	diameter (mm)
central channel H	up to 1,0E+15	1,8E+14	3	200
peripheral channel H	3E+14	1,3E+14	0,1	200
peripheral channel P	0,7 - 1,5E+14	0,5 – 1,0E+13	0,4 - 1	50
standard channel S	1,0 - 3,5E+14	0,1 - 0,7E+14	0,9 - 2,3	84
BR2 - fuel channel	1,0 - 3,5E+14	0,5 – 2,8E+14	1,7 - 8,8	25,4 - 32

Neutron irradiations: BRI

Fluxes at 700 kW reactor power; reactor power can vary between 0 and 700 kW, up to 1 MW also possible for about 3 hours
Temperature: ~ 30 °C; air-cooled reactor

	Approximate thermal neutron flux (n/cm^2s)	Approximate epithermal neutron flux (n/cm^2s)	Approximate fast fission neutron flux (n/cm^2s)	available volume (mm)
BR1 - Y3 channel	2E+11	1,5E+11	2E+10	400 x 80 x 80
BR1 - Y4 channel	4E+11	1E+11	4E+09	400 x 80 x 80
BR1 - spherical cavity	7E+08	0	0	∅ 450
BR1 - spherical cavity + U-converter	5E+07	1,5E+08	5E+08	∅ 40
BR1 – cylindrical converter MARK-3	0	0	2,5E+08	∅ 40; H=80

Note : additional equipment (LNK): Cf-252 and Am-Be neutron sources with ambient dose rate equivalent up to 0.3 mSv/h (2π; 75cm from source); ISO 8529 spectra; ISO 17025 accreditation from BELAC

Gamma irradiations in the BR2 facility

From room temperature to 200°C.

	gamma source	gamma dose rate	volume (height / diameter)	remarks
BRIGITTE-A	Co-60	3 - 15 kGy/h	900 / 70 mm	height with gradient less than 10% ~80 mm
BRIGITTE-B	Co-60	3 - 11 kGy/h	900 / 190 mm	height with gradient less than 10% ~100 mm
RITA	Co-60	50 - 500 Gy/h	500 / 380 mm	height with gradient less than 10% ~150 mm
GEUSE	spent fuel	50 - 1400 Gy/h	500 / 360 mm	height with gradient less than 10% ~300 mm

Gamma irradiations in the Laboratory for Nuclear Calibrations (LNK)

Room temperature

	gamma source	gamma dose rate	beam dia meter (750 mm from the source)	remarks
vertical source Co-60	Co-60	max 700 mGy/h	300 mm	ISO 17025 accreditation from BELAC Beam shape: conical beam (20° full angle)
panoramic source Co-60, Cs-137	Co-60 and Cs-137	350 mGy/h Cs-137 (at 50 cm from source)	2π	ISO 17025 accreditation from BELAC Beam shape: panoramic
horizontal Co-60, Cs-137	Co-60 and Cs-137	12 mGy/h Cs-137 (at 80 cm from source)	300 mm	ISO 17025 accreditation from BELAC Beam shape: conical beam (20° full angle)
X-ray - 300 kV max potential	N, H-250, RQR-series; ISO 4037 standard	hundreds of mGy/h up to 30 Gy/h	300 mm	ISO 17025 accreditation from BELAC Beam shape: conical beam (20° full angle) Achievable dose rate de-pending on beam quality requirements

Note : additional gamma irradiation equipment (BR1): cylindrical converter with gamma dose rate range 0.56 – 17.5 Gy/h