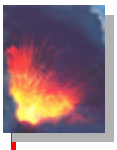


THERMOCOAX
from vision to reality

NEUTROCOAX
Self Powered Neutron Detectors (SPND)

for fixed in-core instrumentation of any nuclear reactor

The THERMOCOAX SPND measures in core the thermal neutron flux. They are used for flux mapping of for safety criteria.

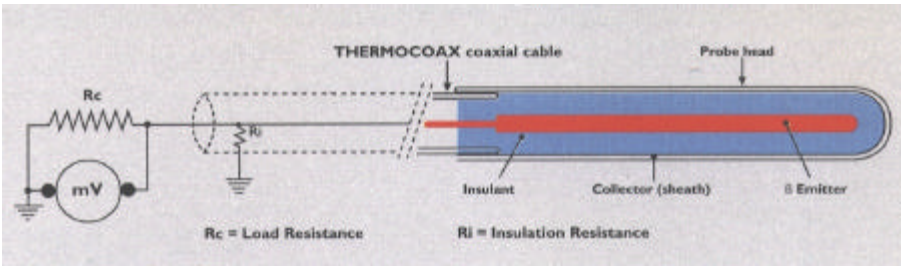
Advantages of THERMOCOAX SPND's

- Exceptionally long life time,
- Simple and inexpensive to install,
- Compatible with standard electronic amplifiers,
- Linear responses for flux ranges of 10^{10}-10^{15} n cm^{-2} s^{-1}
- Suitable in severe environment,
- No need of voltage supply,
- Rigid or flexible detectors,
- Wide range of emitters : rhodium, vanadium, silver, cobalt, platinum.

The NEUTROCOAX SPND is a neutron absorber material called emitter, insulated from the sheath or collector by alumina or magnesia insulator in a coaxial geometry.

The SPND is connected to an amplifier by a single lead or twin lead THERMOCOAX coaxial cable capable of correcting the spurious current due to the irradiation of the cable.

Thanks to their very small sized and small bending radius, NEUTROCOAX SPND can be installed in tine places of the reactors



Emitter material	*s_a = thermal neutron absorption cross section (Barns)*	*ƒ = Emitter diameter (mm)*	*ƒ = Outer diameter (mm)*	*Sensitivity ($A/n.cm^2.s^{-1}/cm$)*	*Current (A) (Emitter length = 20 cm and ƒ = 10^{13} n $.cm^{-2}.s^{-1}$)*	*Response time*
$^{103}_{45}$Rh	150	0.5	1.4	11.5 10^{-22} A / nv / cm	≈ 230 vA	68 s
$^{103}_{45}$Rh	150	1	2.5	20.5 10^{-22} A / nv / cm	≈ 410 nA	68 s
$^{103}_{45}$Rh	150	2	4.1	27 10^{-22} A / nv / cm	≈ 540 nA	68 s
$^{51}_{23}$V	5	0.5	1.4	0.8 10^{-22} A / nv / cm	≈ 15 nA	5.4 mn
$^{51}_{23}$V	5	1	2.5	1.7 10^{-22} A / nv / cm	≈ 34 nA	5.4 mn
$^{51}_{23}$V	5	2	4.1	4.8 10^{-22} A / nv / cm	≈ 96 nA	5.4 mn
$^{109}_{47}$Ag	113	1	2.5	14 10^{-22} A / nv / cm	≈ 280 nA	51 s
$^{107}_{47}$Ag	45	1	2.5	14 10^{-22} A / nv / cm	≈ 280 nA	51 s
$^{59}_{27}$Co	37	0.5	1.4	0.17 10^{-22} A / nv / cm	≈ 3.4nA	< 0.05 s
$^{59}_{27}$Co	37	1	2.5	0.710^{-22} A / nv / cm	≈ 14 nA	< 0.05 s
$^{59}_{27}$Co	37	1.4	2.5	1.210^{-22} A / nv / cm	≈ 24 nA	< 0.05 s
$^{59}_{27}$Co	37	2	4.1	1.8 10^{-22} A / nv / cm	≈ 25 nA	< 0.05 s
$^{195}_{78}$Pt	8.1	0.5	1.4	0.5 10^{-22} A / nv / cm	≈ 10 nA	< 0.05 s
$^{195}_{78}$Pt	8.1	1	2.5	0.9 10^{-22} A / nv / cm	≈ 18 nA	< 0.05 s

Data subject to alteration without notice

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