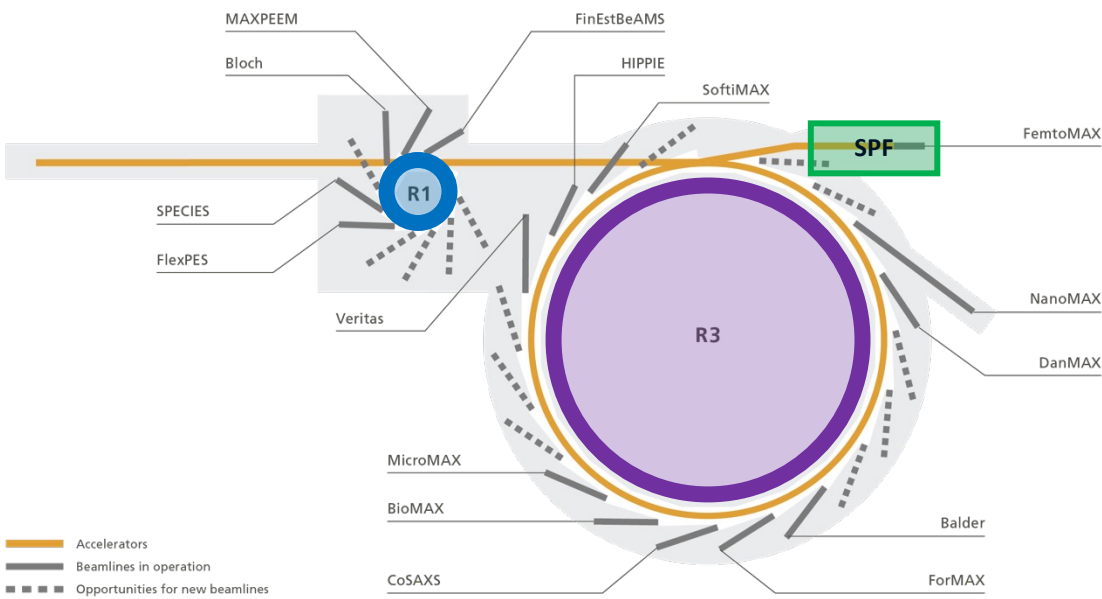


Beamline Portfolio



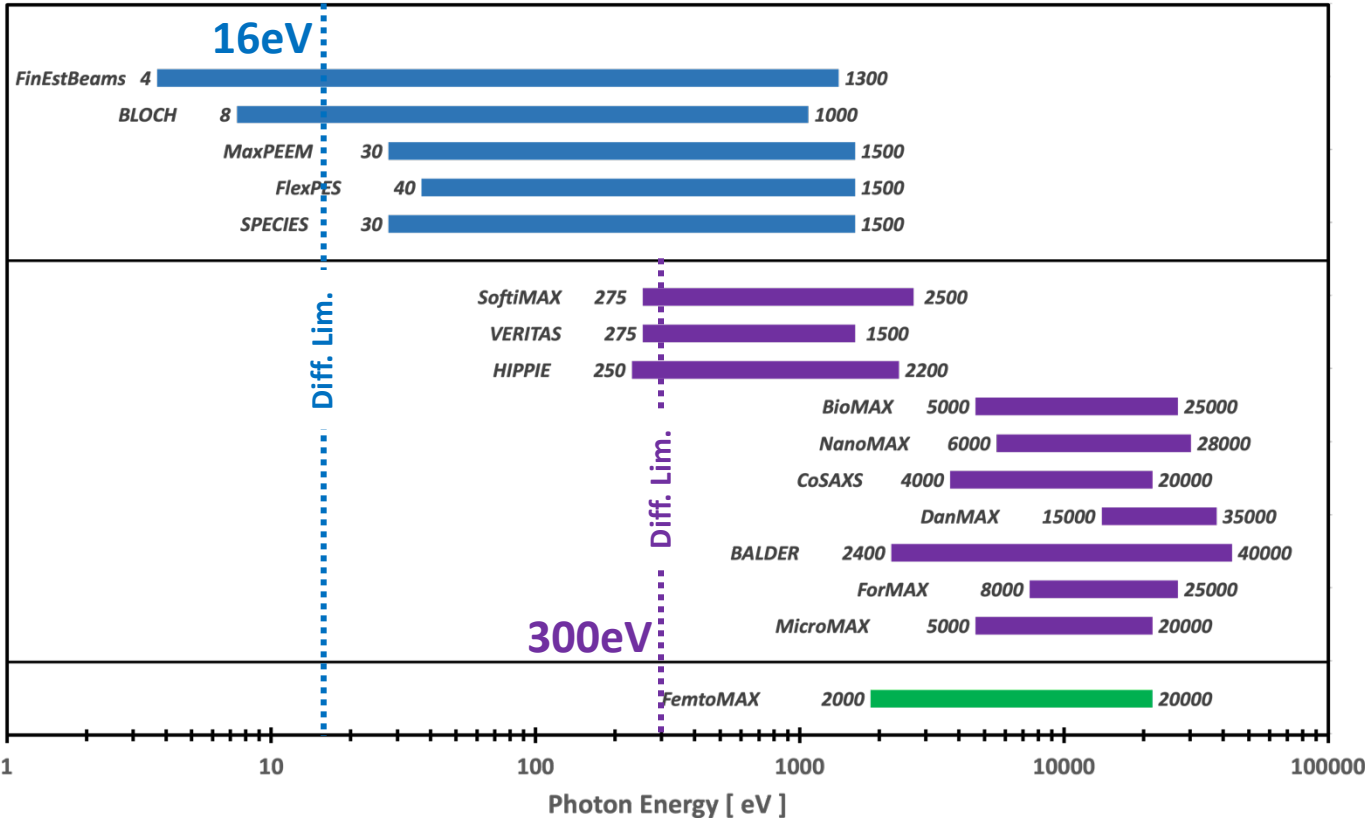
Soft X-rays

surface and sub-surface information

Hard X-rays

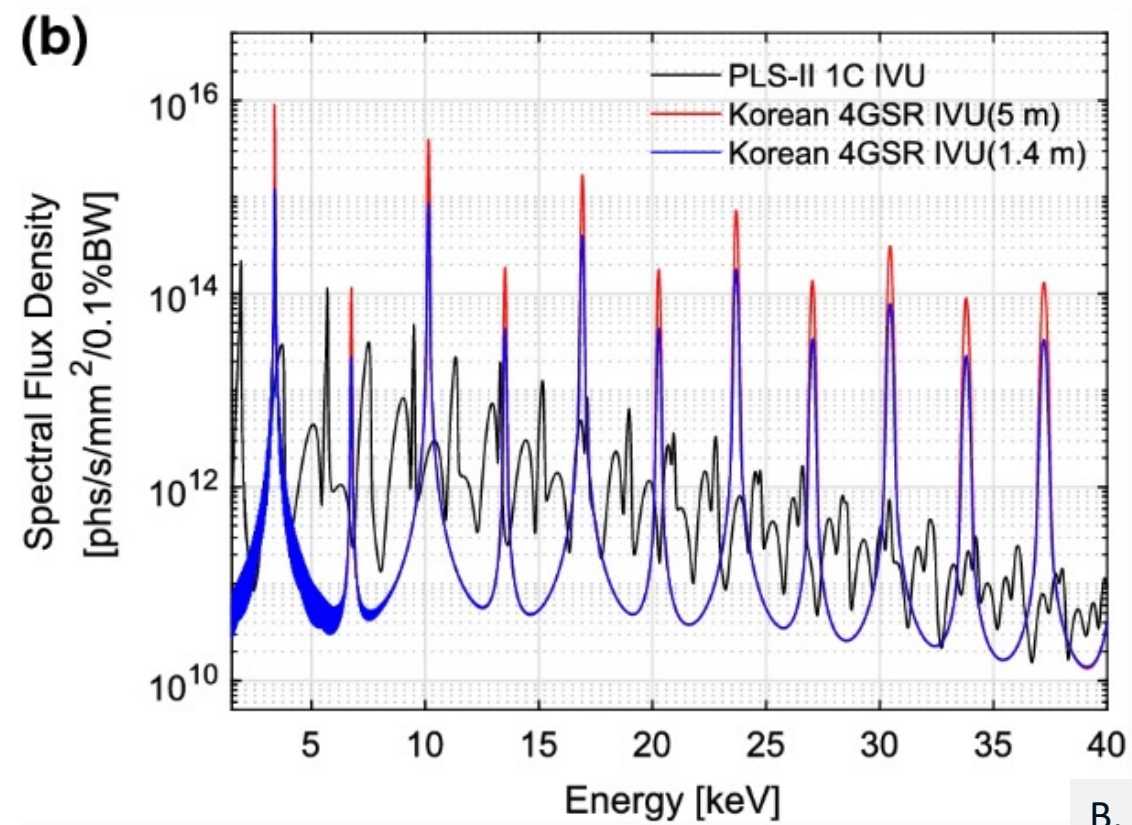
bulk information and buried interfaces

16 beamlines in operation and covering a broad X-ray energy range from 4 eV to 40 keV



Small Emittance – Photon /eV

A larger number of photons per energy bandwidth



B. Cho *et al.*, J. Kor. Phys. Soc. 78:467 (2020)

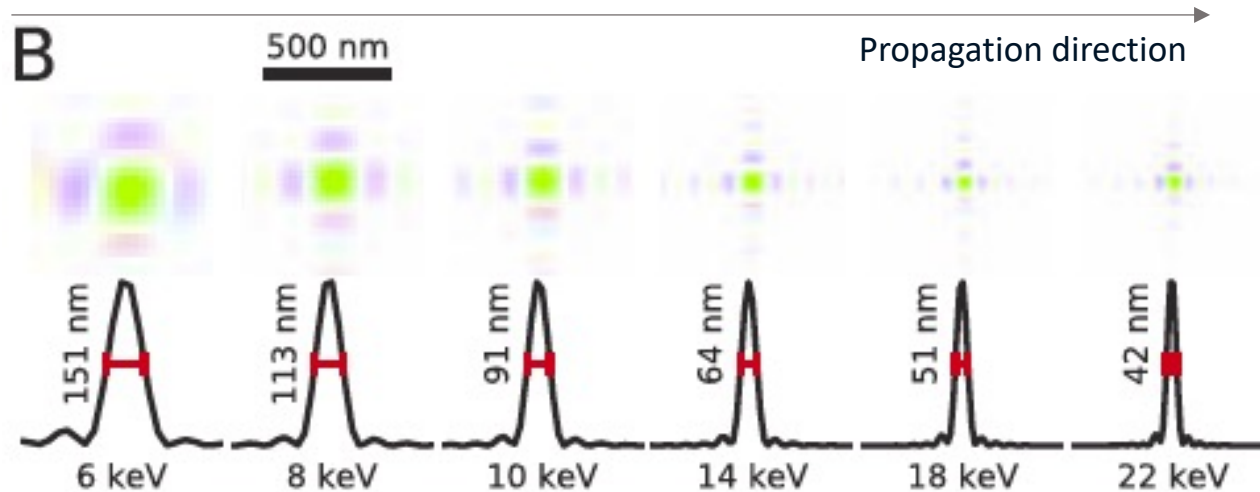
FlexPES	FinEstBeAMS	Bloch ✓	Veritas ✓	NanoMAX ✓	Balder ✓	CoSAXS ✓	MicroMAX ✓
SPECIES	MaxPEEM	HIPPIE ✓	SoftiMAX ✓	DanMAX ✓	ForMAX ✓	BioMAX ✓	FemtoMAX

Small Emittance – Focusing to μm & sub- μm sizes

A larger number of photons in smaller beam size



Ptychographic reconstruction of a focused beam



Measurement of the energy dependence of the focused beam size at NanoMAX

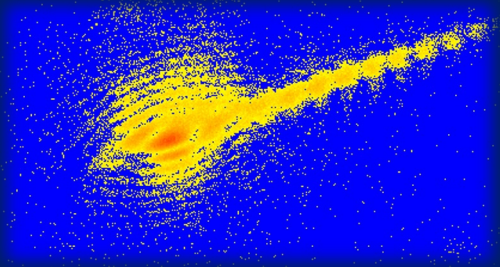
Björling *et al.*, Optics Express **28** (4) 5069 (2020)

FlexPES	FinEstBeAMS	Bloch ✓	Veritas ✓	NanoMAX ✓	Balder ✓	CoSAXS ✓	MicroMAX ✓
SPECIES	MaxPEEM	HIPPIE ✓	SoftiMAX ✓	DanMAX ✓	ForMAX ✓	BioMAX ✓	FemtoMAX

Small Emittance Coherence

A larger number of coherent photons – Explore opportunities with coherence

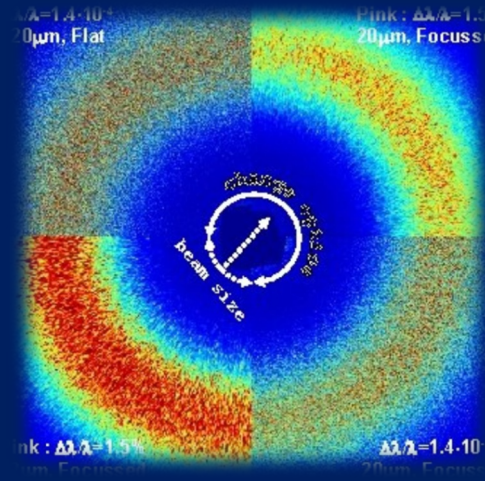
Coherent Diffraction Imaging



Phase Contrast

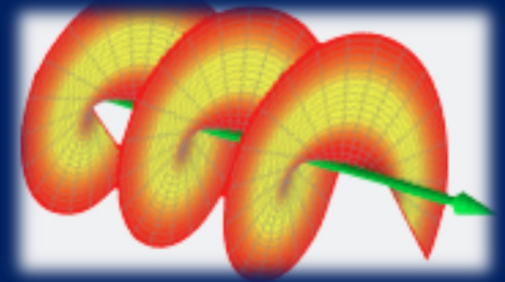


Speckle Spectroscopy



Looking forward

Orbital Angular Momentum



FlexPES

FinEstBeAMS

Bloch

Veritas

NanoMAX

Balder

CoSAXS

MicroMAX

SPECIES

MaxPEEM

HIPPIE

SoftiMAX

DanMAX

ForMAX

BioMAX

FemtoMAX

Small Emittance – Summary

Acc	Beamline	X-rays	Technique	Detection	Focusing	Photon / eV	Coherence
R1	FlexPES	Soft	XPS, XAS, PEPICO	e-			
R1	Species	Soft	AP-XPS, RIXS	e-			
R1	FinEstBeAMS	Soft	XPS, XAS, PLS, PEPICO, TOFMS	e- and vis			
R1	MaxPEEM	Soft	SPELEEM	e-			
R1	Bloch	Soft	Micro-ARPES, spin-ARPES	e-	✓	✓	
R3	Hippie	Soft	time resolved AP-XPS	e-	✓	✓	
R3	Veritas	Soft	RIXS	X-rays	✓	✓	
R3	SoftiMAX	Soft	STXM / CXDI	X-rays	✓	✓	✓
R3	NanoMAX	Hard	CXDI- ptycho- tomo – Spec/Diff Microscopy	X-rays	✓	✓	✓
R3	DanMAX	Hard	XRD -Tomo – Spec/Diff. Microscopy	X-rays	✓	✓	✓
R3	Balder	Hard	XES /XAS	X-rays	✓	✓	
R3	ForMAX	Hard	Tomography – Spec/Diff. Microscopy	X-rays	✓	✓	✓
R3	CoSAXS	Hard	SAXS/WAXS, XPCS	X-rays	✓	✓	✓
R3	BioMAX	Hard	MX	X-rays	✓	✓	
R3	MicroMAX	Hard	MX, Serial MX	X-rays	✓	✓	