

Laboratorietester



Asbjørn Jokstad
Institutt for klinisk odontologi
Universitetet i Oslo

Standarder

Static stresses

Compressive (crushing) strength, 1h & 24 h	MPa
Tensile strength, 15 min.	MPa
Transverse strength, 1h & 24 h (Flexure/bending/modulus of rupture)	MPa
Modulus of elasticity (Young's Modulus)	MPa
Shear modulus	MPa

Dynamic tests

Compressive modulus	GPa
Tensile modulus	GPa
Bending modulus	GPa
Resilience	J/m ²
Fatigue	n/MPa
Fracture toughness	K _{ic}

Standarder

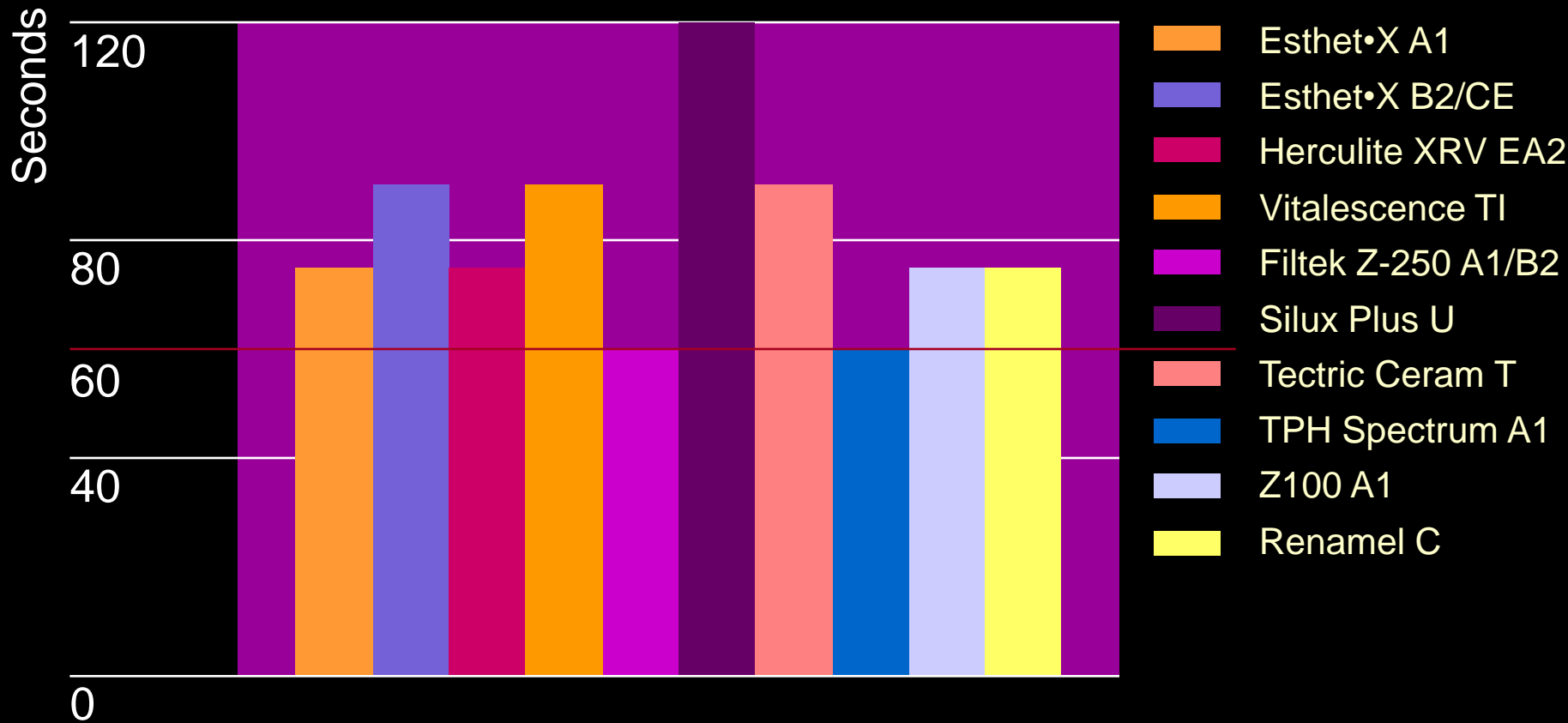
Other defined tests

Flow (Creep) 3-24 h	%
Dimensional change 5 min -24 h (Polymerization/setting contraction/expansion)	um/cm alt. vol%
Hardness	Knoop
Thermal Expansion Coefficient	
Water solubility	mg/cm ²
Water sorption	wt% alt. vol%

Other undefined tests

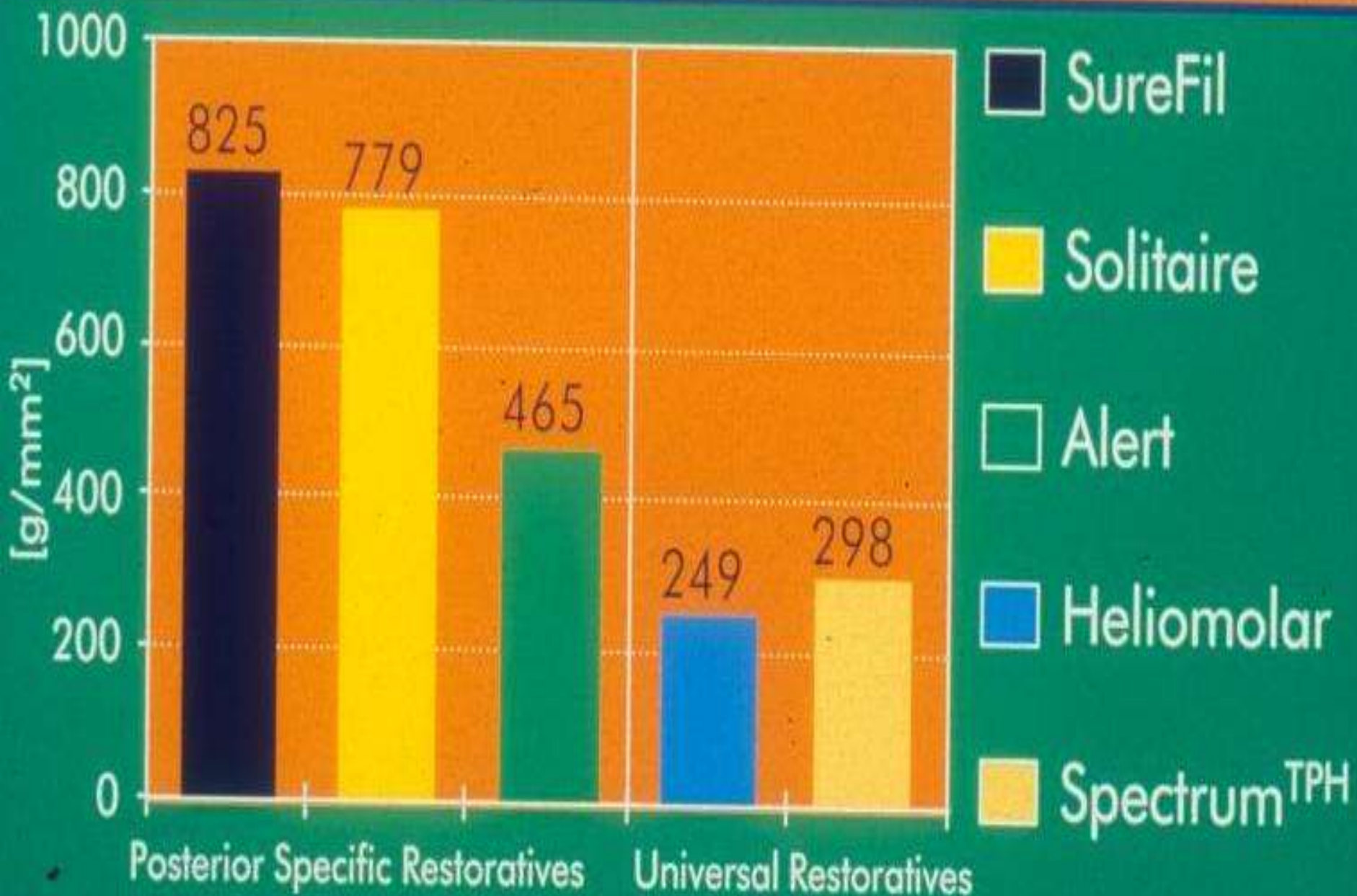
Abrasion resistance (Wear)	um/cm alt. vol%
Adhesion	MPa
Color stability	
Surface roughness	Ra
Margin leakage	

Ambient working time

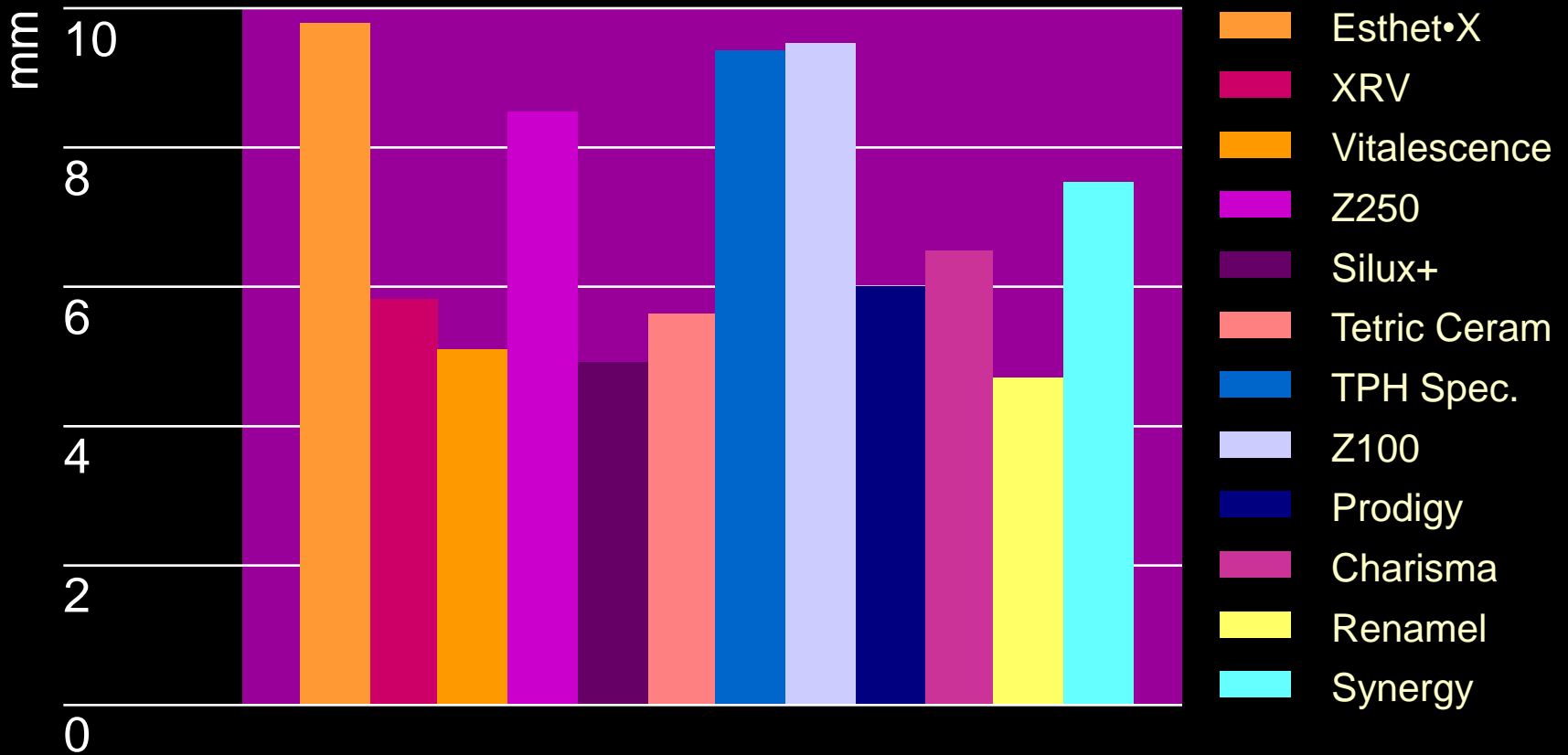


(ISO Spec. 4049, Minimum 60 sec @ 8000 Lux)

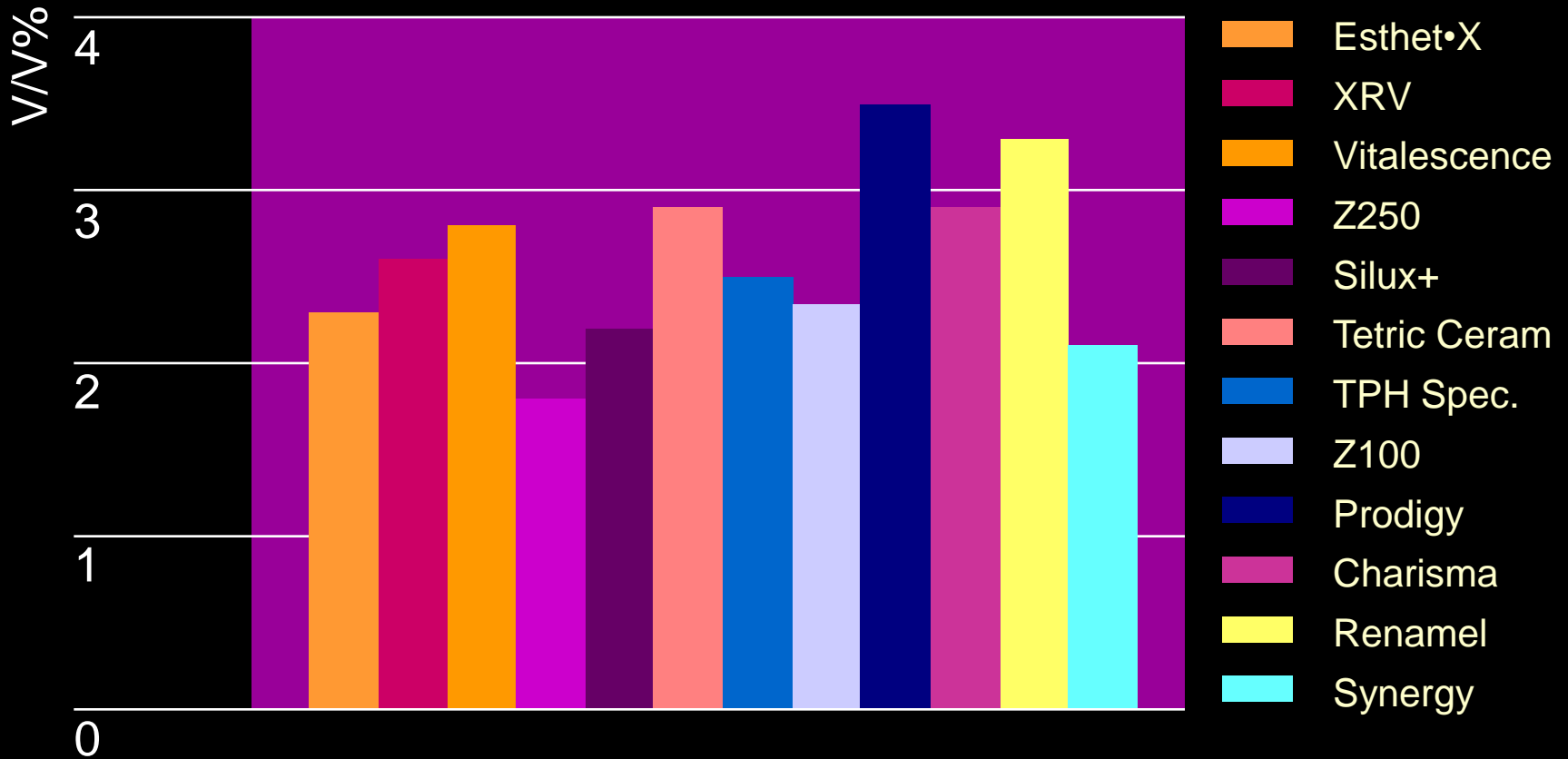
Packability



Depth of cure at 20" light exposure

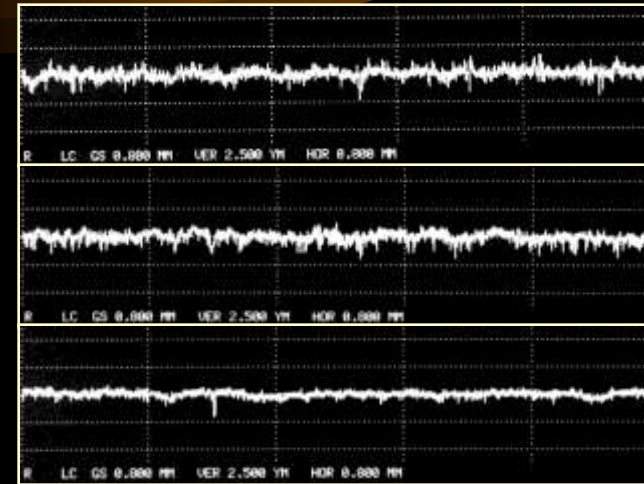
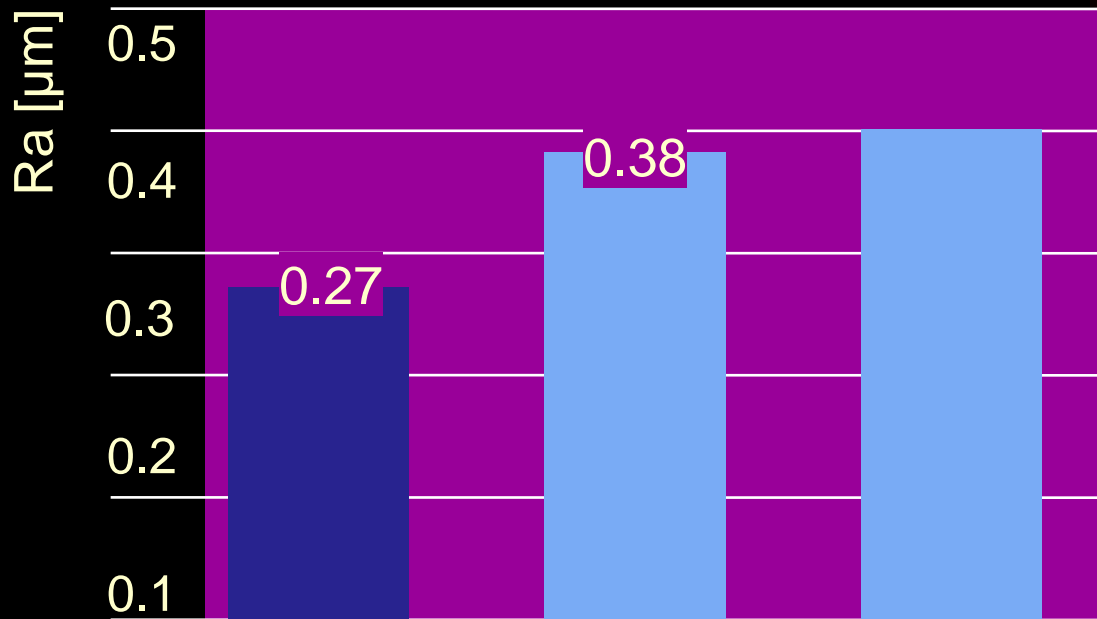


Polymerization shrinkage (Volumetric)

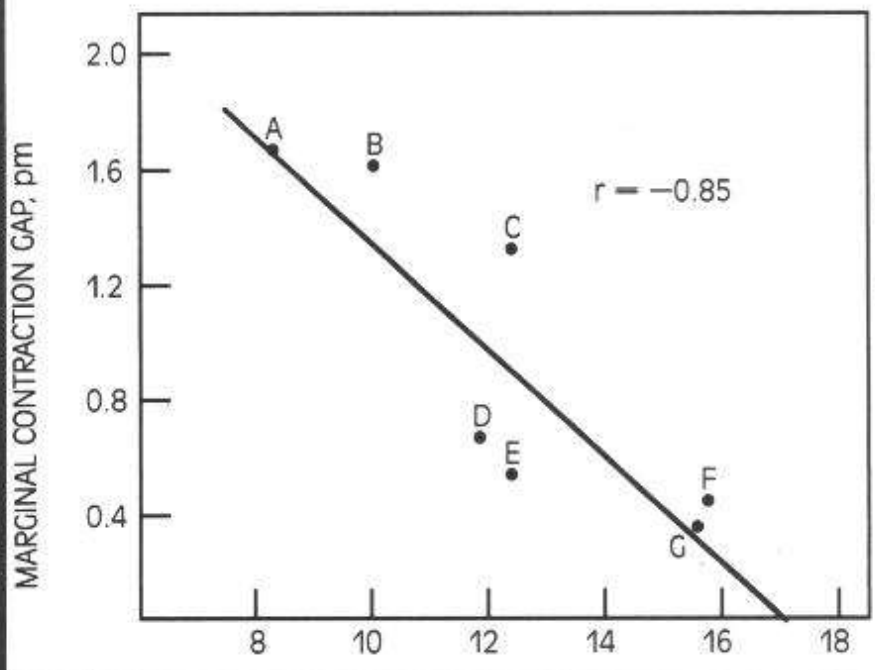


Surface Roughness

Profilometer Measures



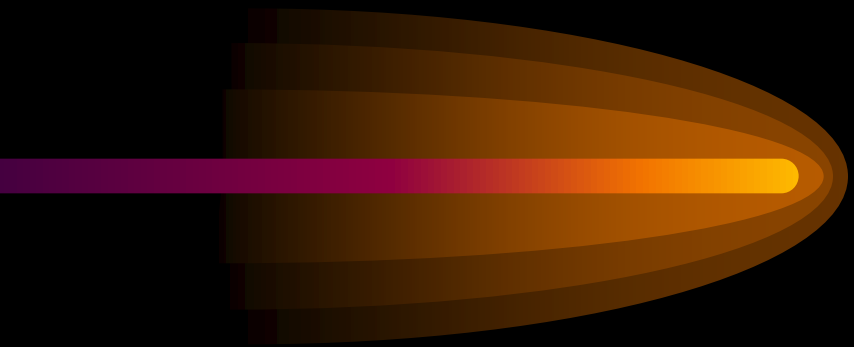
Marginal contraction gap vs shear bond strength



SHEAR BOND STRENGTH, MPa

Munksgaard, E.C.; IRIE, M.; Asmussen, E. (1985) J. Dental Research 64(12): 1409 - 1411

EXTRAPOLATED ADHESION FOR "ZERO" GAP
17 MPA 170 Kg/cm²

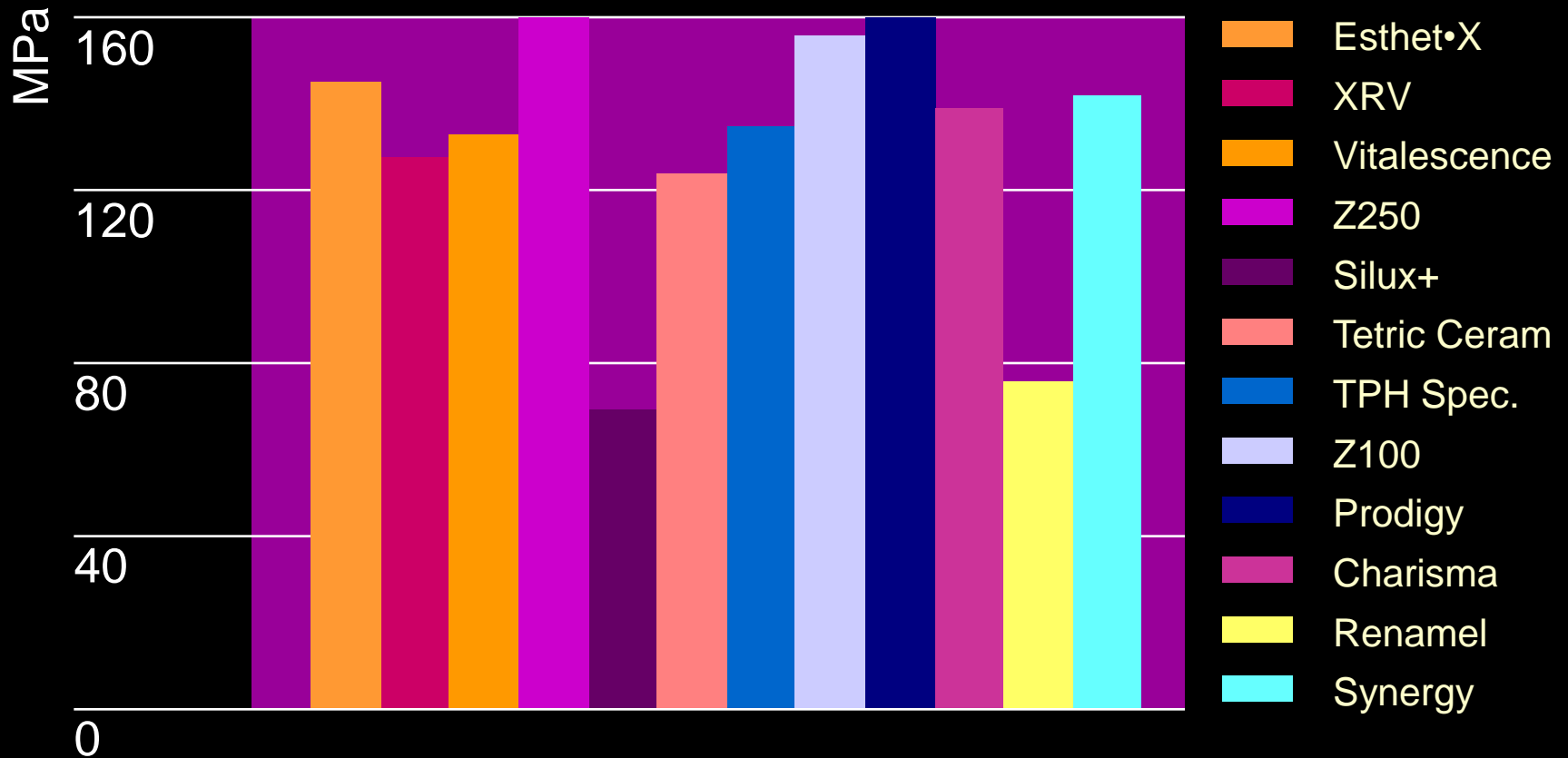


24 Hour Compressive Strength

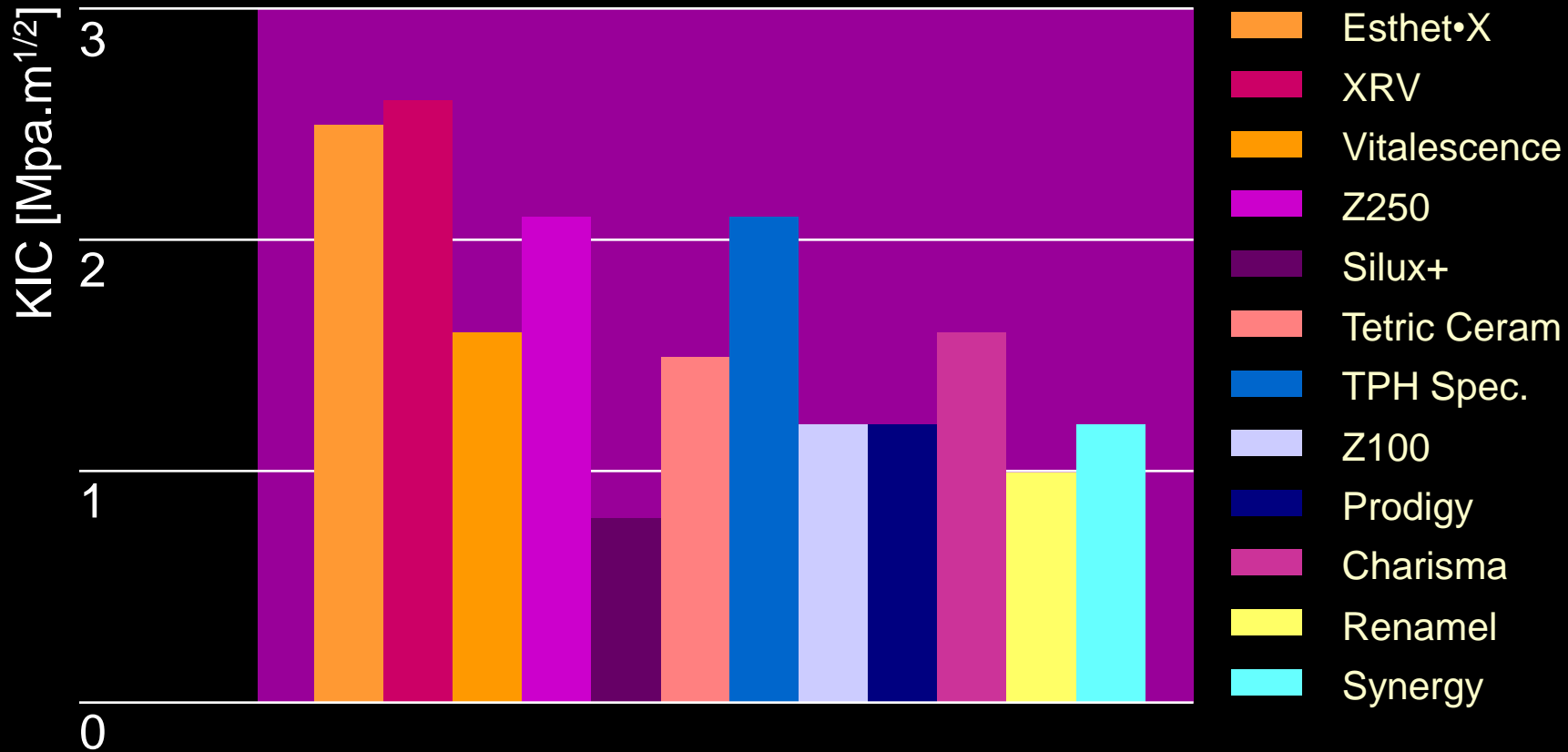
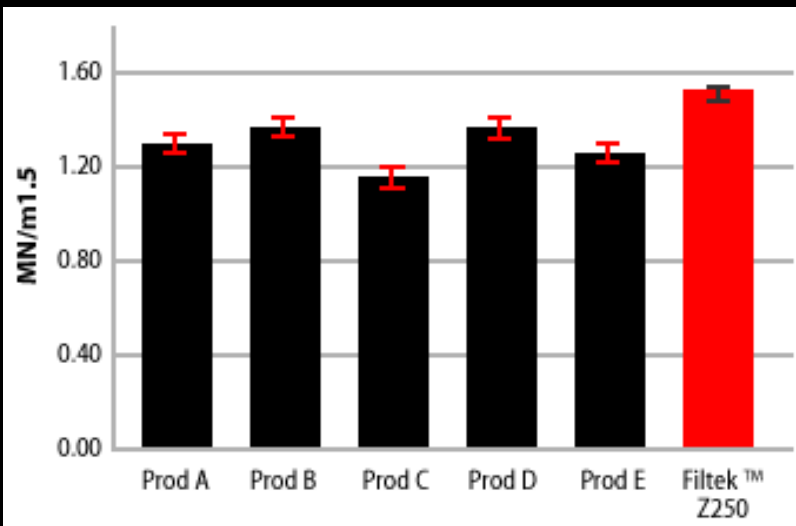


Flexural (transverse) strength

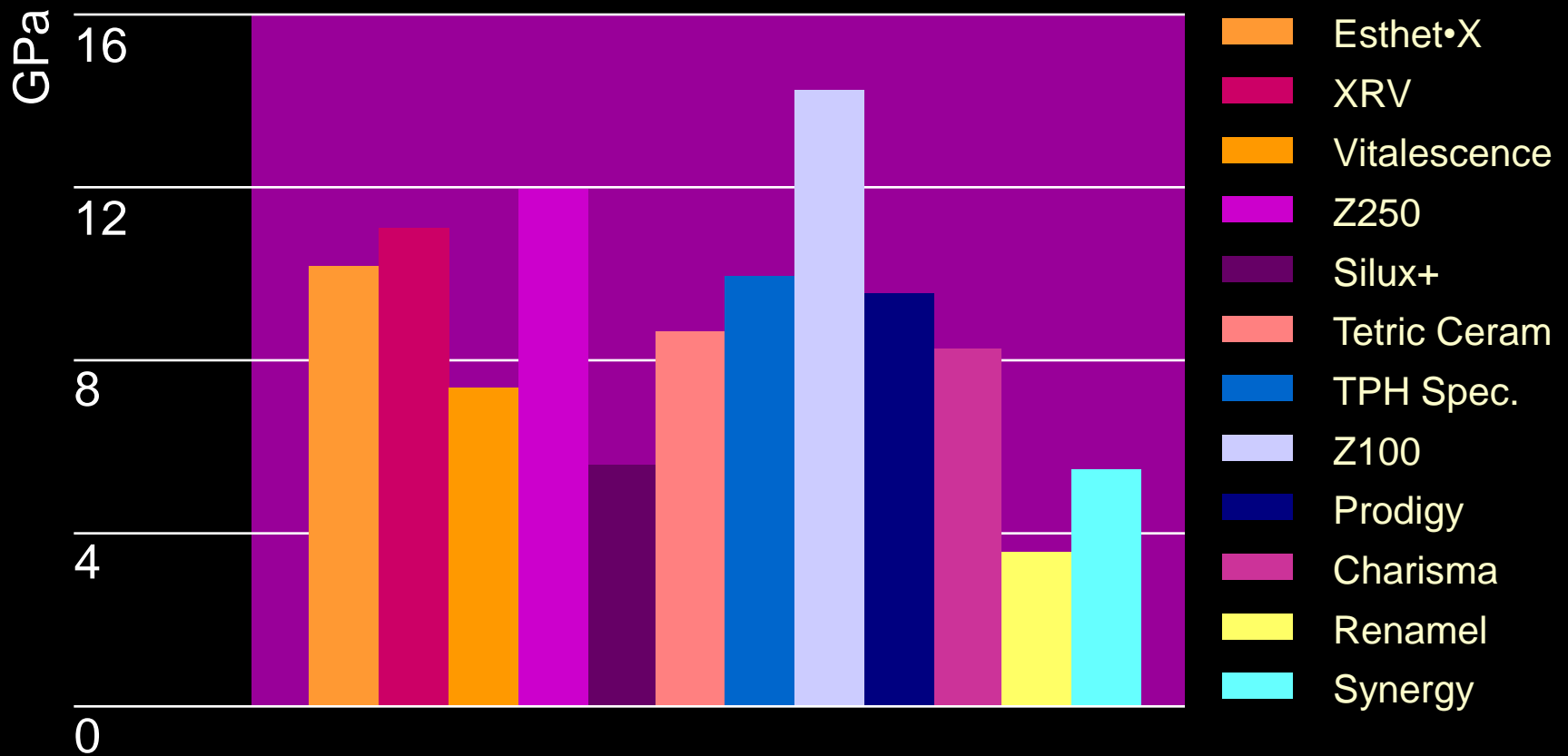
24h

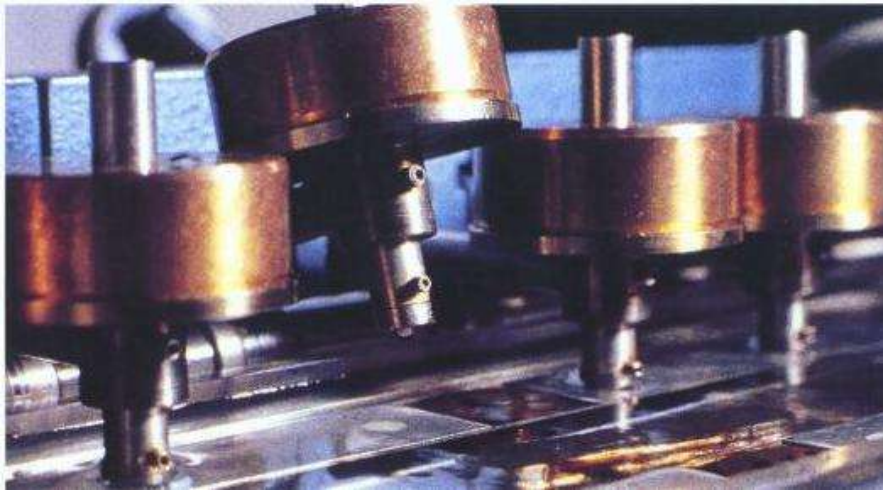


Fracture Toughness



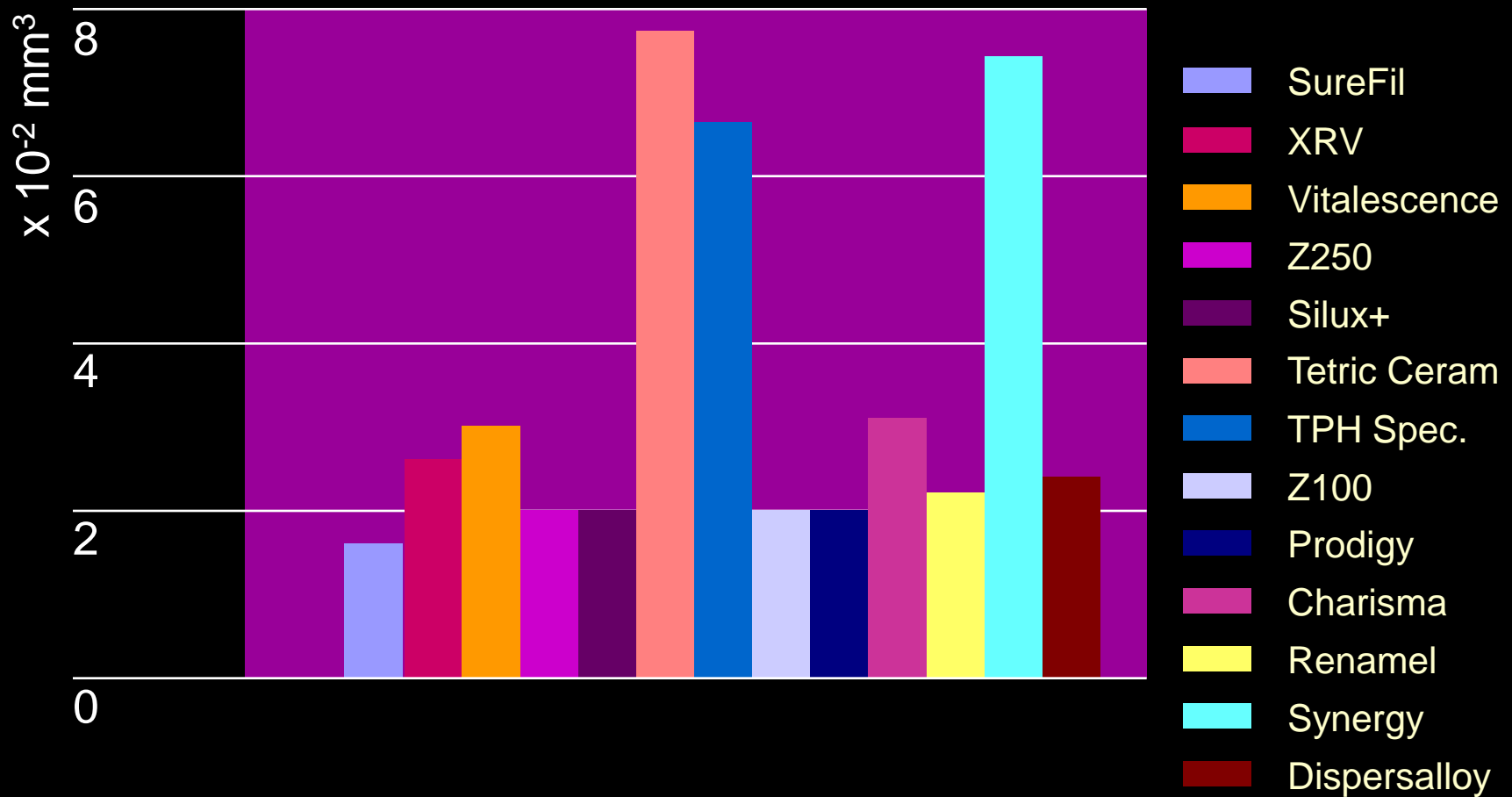
Flexural modulus





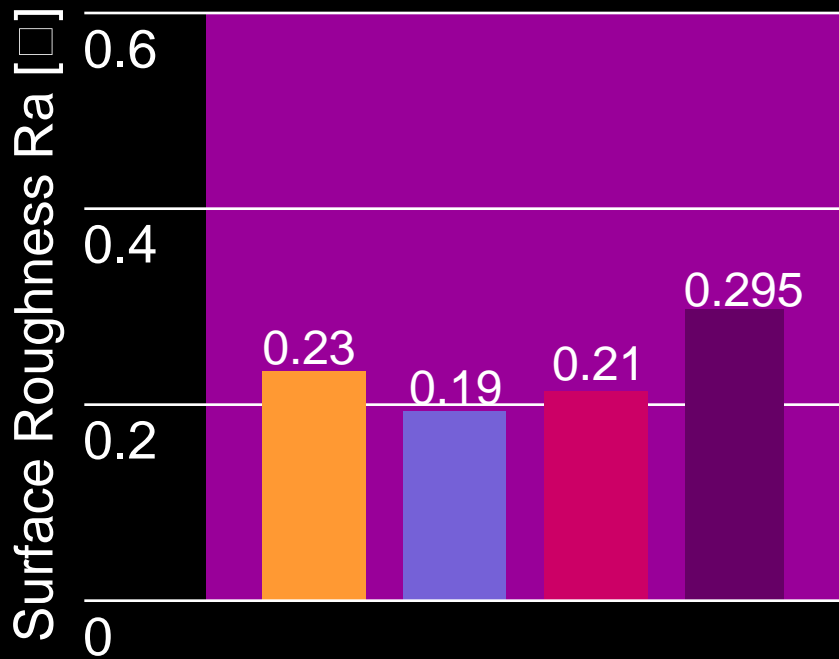
In vitro wear loss

(4 000 000 cycles)

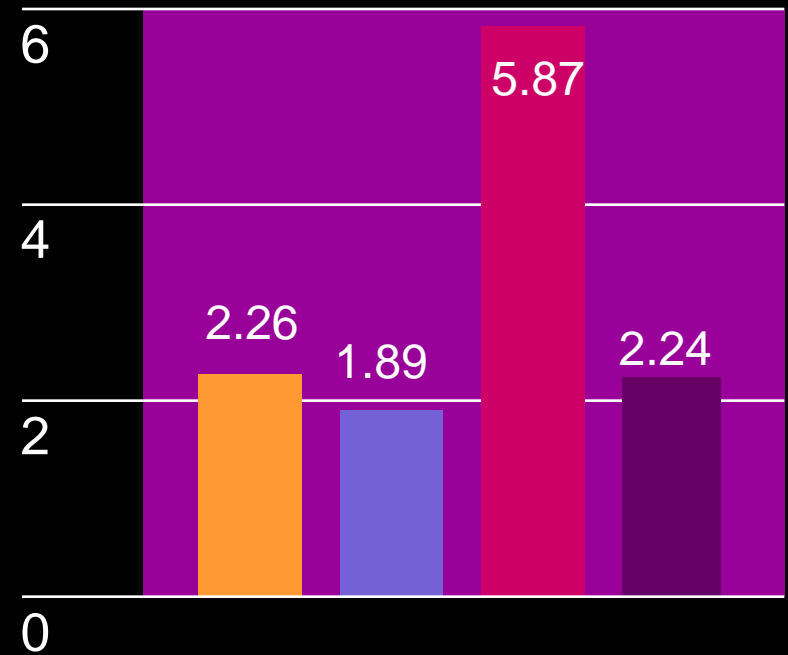


Tooth Brush Abrasion Test

Pre-Test

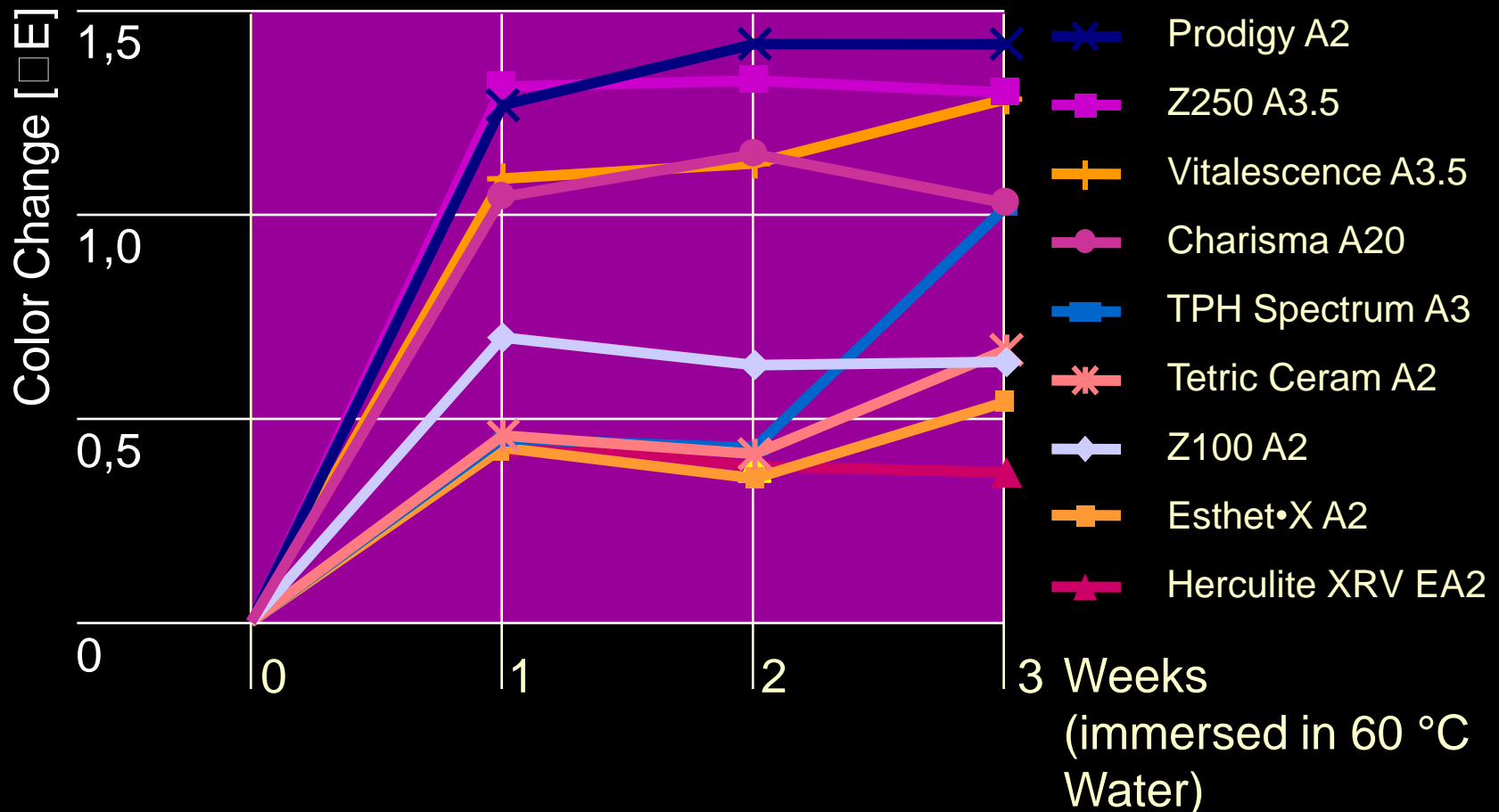


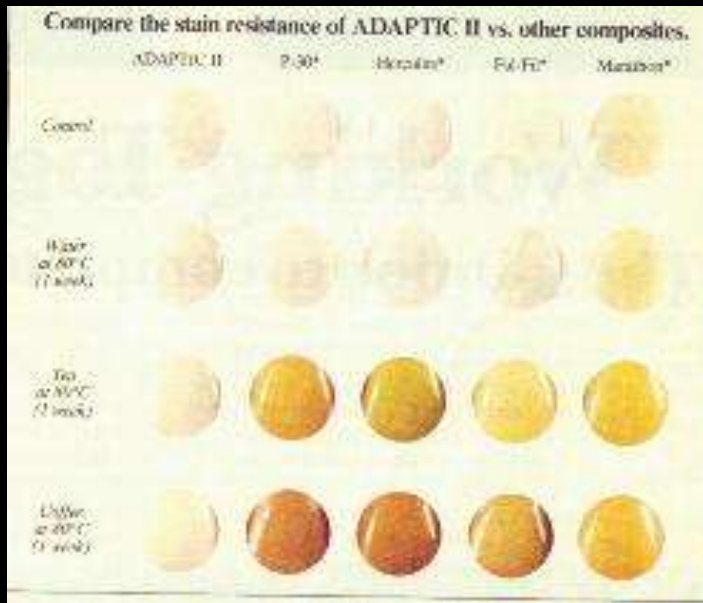
Post-Test



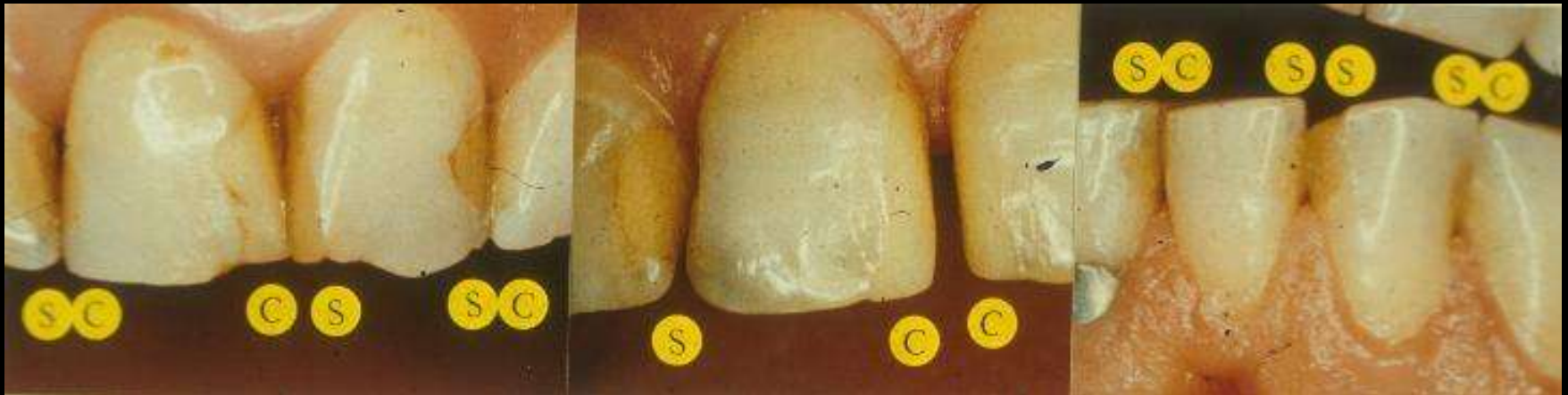
Toothbrush Abrasion - 56k Cycles (□ 5 years)

Color stability, 60°C

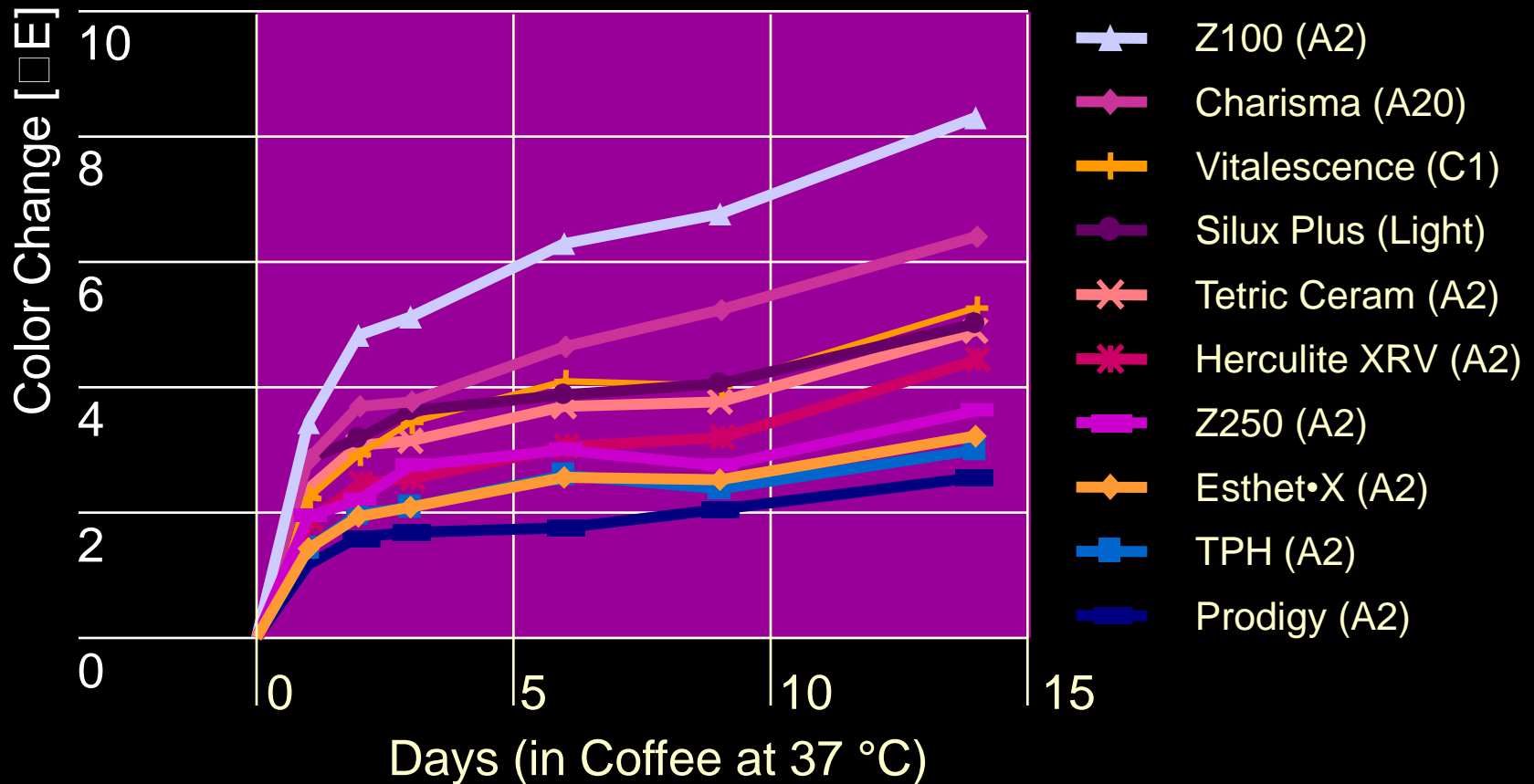




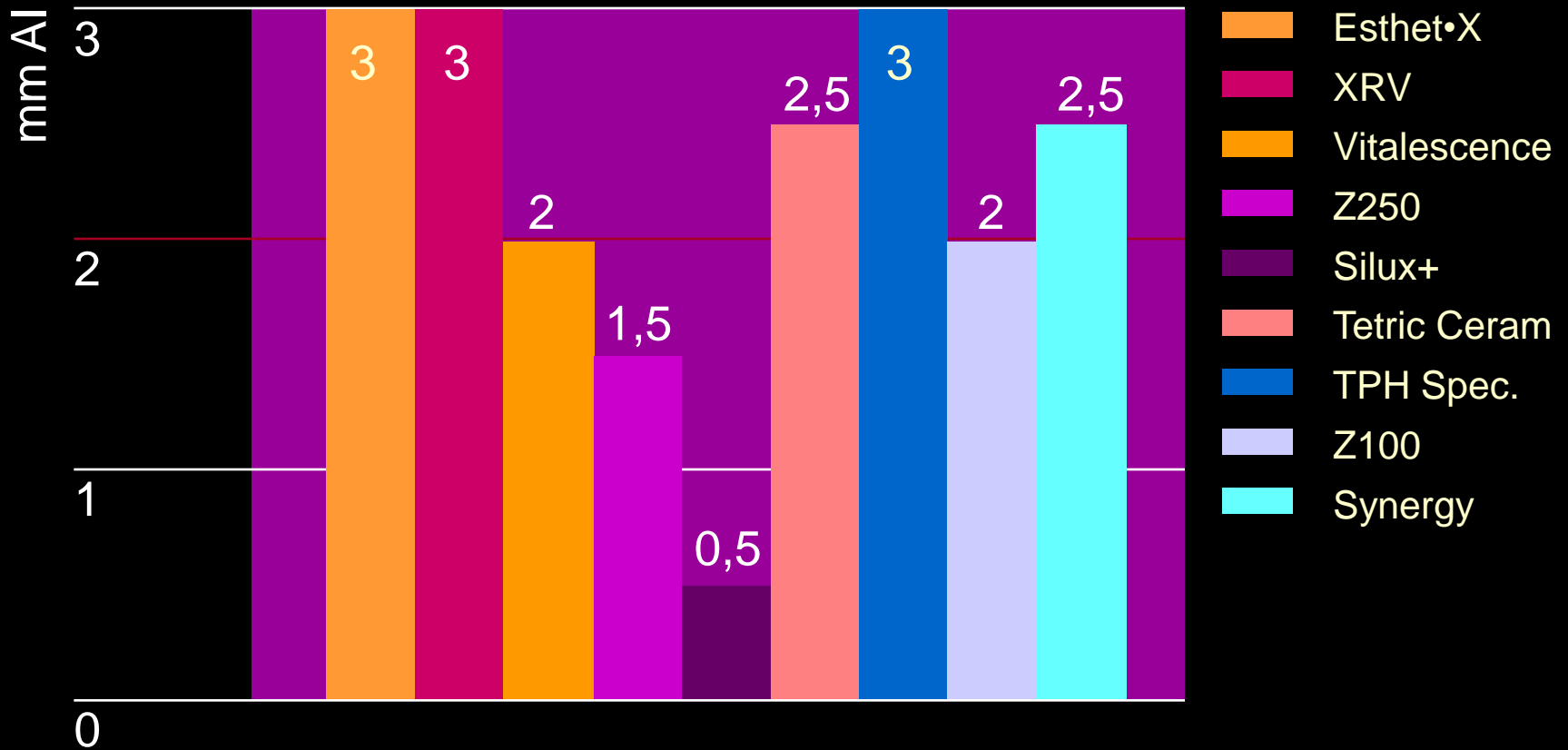
Color stability vitro - vivo



Coffee Stain Resistance



Radiopacity



Radiopacity



++ emalje

ProTec Cem
Sono-Cem
Variolink

+ emalje

Cement-It!
Choice
Compolute
Dual Cement
Duo Cement
Enforce
MGC Lute
Mirage
Nexus
Opal
PermaCem

E
m
a
l
j
e

-emalje +dentin

C&B Cement
Biomer
Lute-It!
Panavia 21

D
e
n
t
i
n

- dentin

C&B Metabond*
Clearfil CR
Dyract Cem
Fuji Plus
GC Cera Bond
HyBond
Ketac Cem

* Klar type

←-----

--

--SVERTNING--

-

-----→