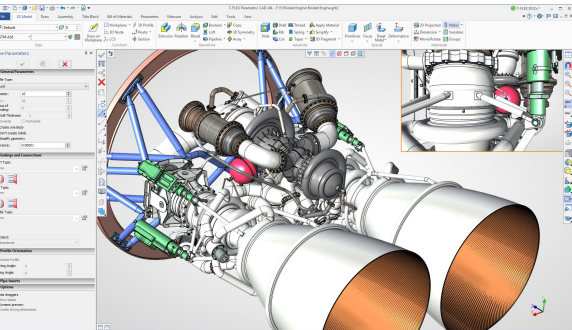
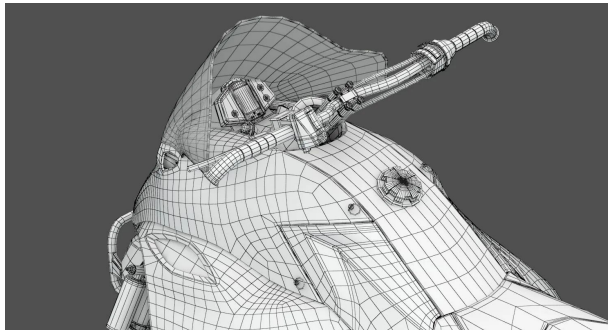


# What is 3D modelling | CAD vs Polygonal

## CAD



## Polygonal



# What is 3D modelling | CAD vs Polygonal

## CAD

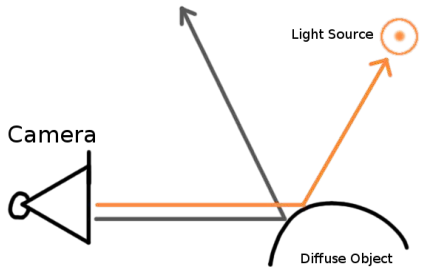
- Precise
- Slow
- Edit history by feature tree
- Accurate simulations
- Tries to look good but fails

## Polygonal

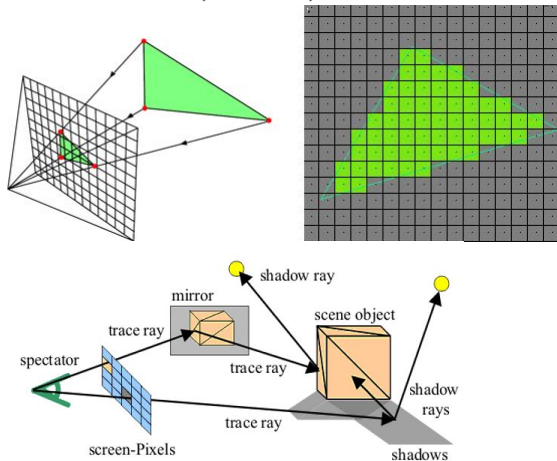
- Looks right? Good
- Faster
- Edit history by *Ctrl+Z*
- Quick physics and key-framed animations
- Can be beautiful

# What is 3D modelling | How 3D scene turns into 2D image

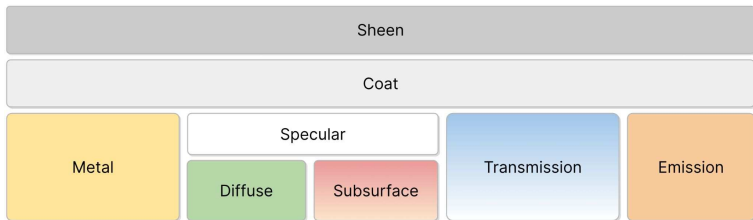
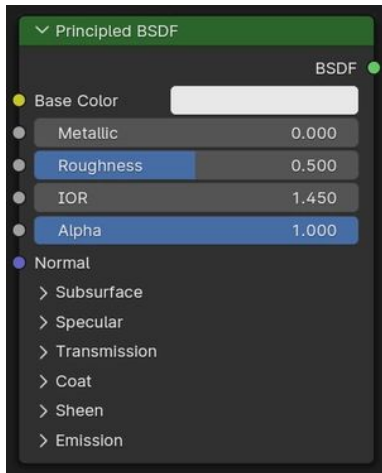
## Path tracing (Cycles)



## Rasterization (EVEE)

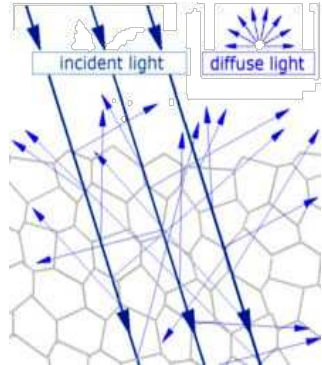
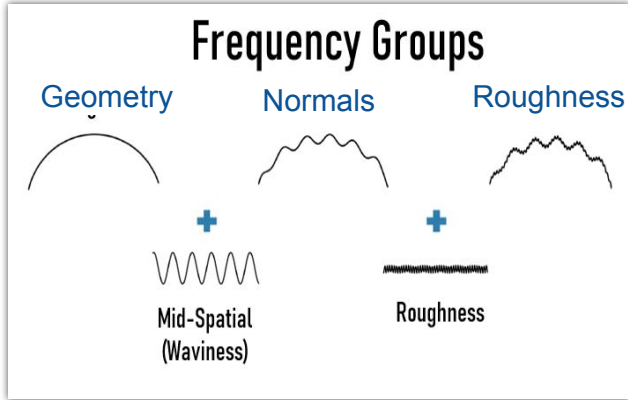


# What defines the material | Principled BSDF



[Blender 4.1 Manual](#)  
Rendering/Shader  
nodes/Shaders/  
Principled BSDF

# What defines the material | Roughness

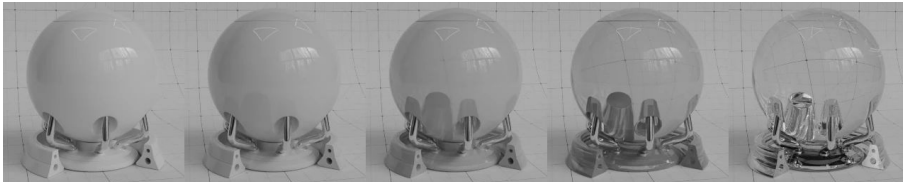
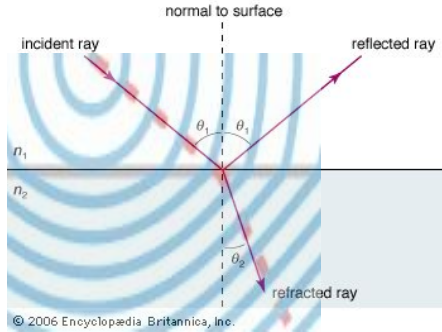


# What defines the material | Transmission, IOR

IOR - Index of Refraction

Snell's law:

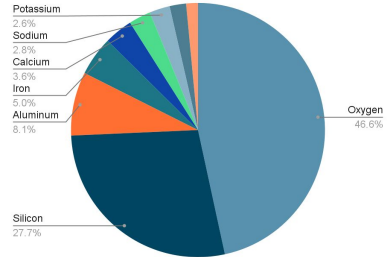
$$n_1 \sin \theta_i = n_2 \sin \theta_t$$



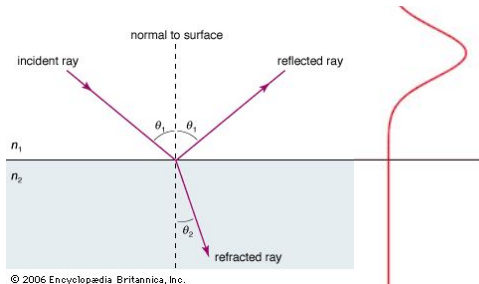
# What defines the material | Metallic

1																	18
H																	He
3	4											13	14	15	16	17	10
Li	Be											B	C	N	O	F	Ne
11	12											Al	Si	P	S	Cl	Ar
Na	Mg											26	27	28	29	30	36
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
55	56	57-71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86
Cs	Ba		Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
87	88	89-103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118
Fr	Ra		Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Uut	Fl	Uup	Lv	Uus	Uuo

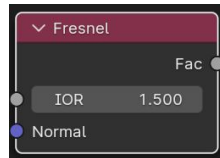
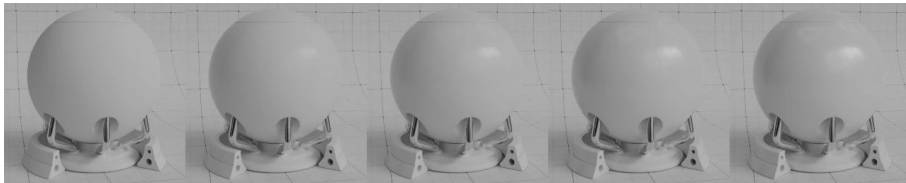
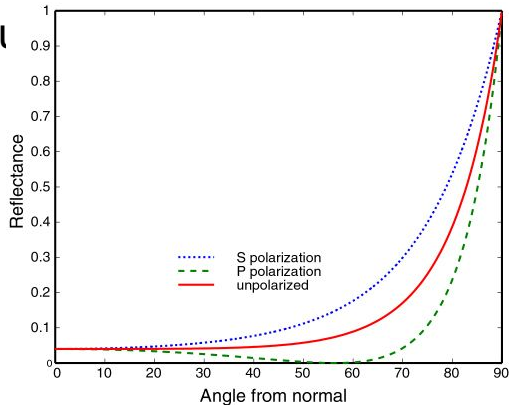
Earth Crust Composition



# What defines the material | Spec

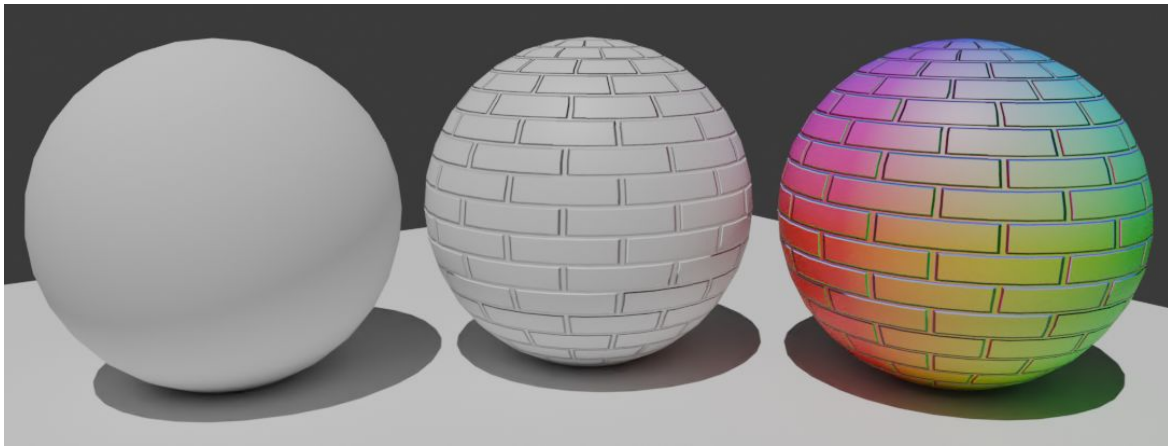


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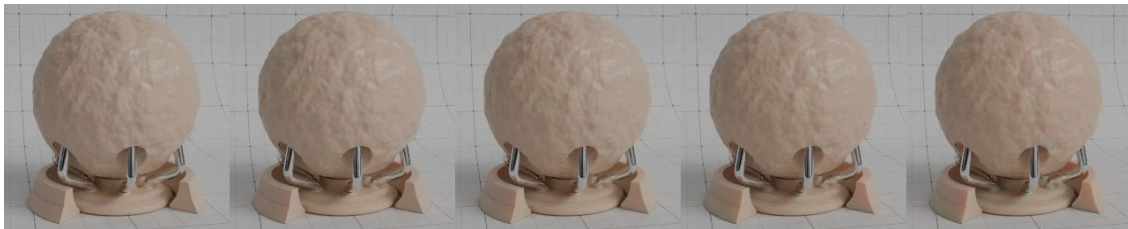
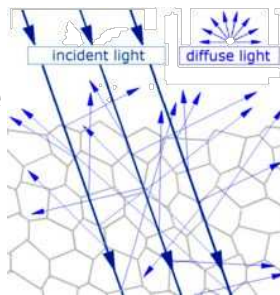




## What defines the material | Normal



# What defines the material | Subsurface



## What defines the material | Coat



# What defines the material | Sheen



Weight from 0.0 to 1.0 /

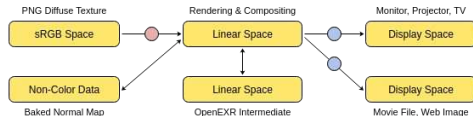
Roughness from 0.0 to 1.0



# Render | Color Management



Different views and exposures of the same render



**Filmic**



**ACES**



**ARRI**



**AgX**



Different color transformations  
ARRI - cinema-grade cameras