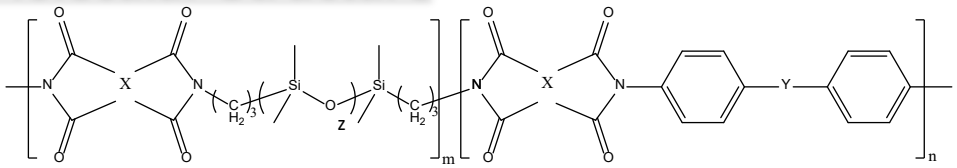
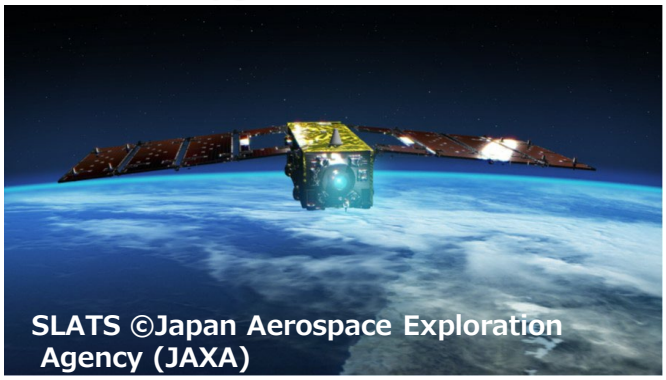
NIPPON STEEL Chemical & Material Co.,Ltd. ChemMat

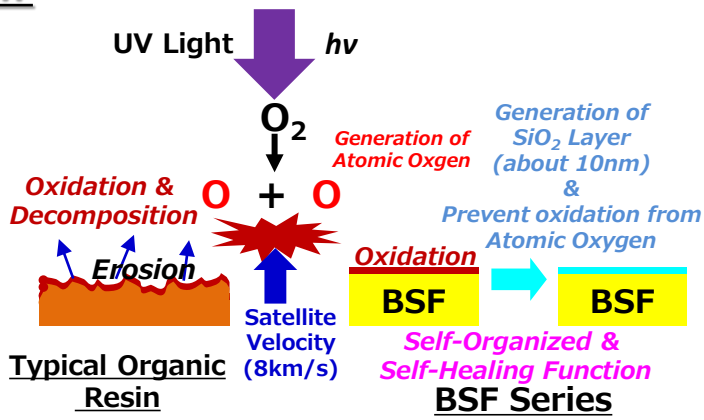
Atomic-Oxygen Tolerant Film "Siloxane Block Polyimide BSF series" for LOW ORBIT SATELLITE

Typical Molecular Structure



Atomic-Oxygen Tolerant Mechanism



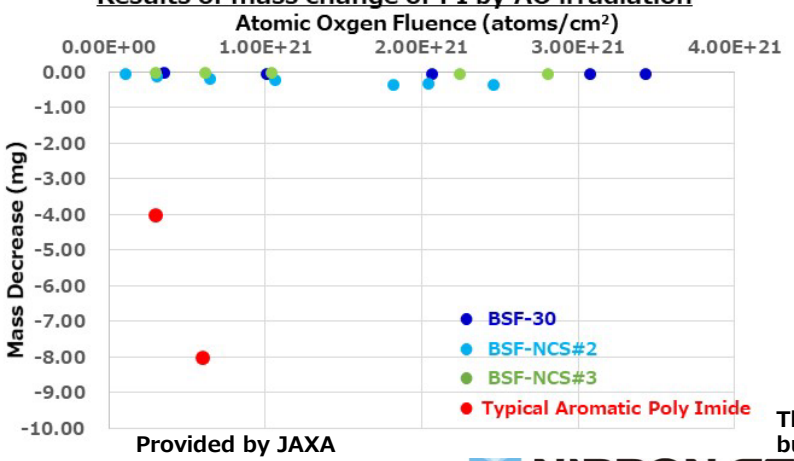


Typical Properties

Item	unit	BSF-30	BSF-NCS#2	BSF-NCS#3
Glass transition temp (Tg)	℃	187	176	140
5% Thermal decomposition (Td5)	℃	456	462	456
coefficient of thermal expansion(CTE)	ppm/K	100	68	92
Young's Modulus	GPa	1.4	1.9	1.7
Elongation	%	15	11	45
Tensile Strength	MPa	53	87	59
Cyclic silicone Outgassing component	–	Contain	None	None

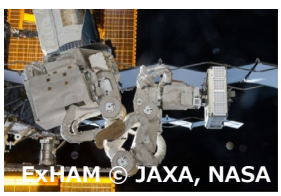
Atomic-Oxygen Tolerant Test Results

Results of mass change of PI by AO irradiation



Provided by JAXA

Exposure Tests



Exposure test of BSF-30 on the ISS "KIBO" for 8.5 months.

Before Flight

After Flight

The color change of BSF-30 was caused by UV light, but there was not the erosion by AO.

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