% First Order Shelving All Pass Filter with gain 0dB

f\_crit = 6220; j = sqrt(-1); fo = f\_crit; C = 0.000000015;

K = 1;

R = 1/(2\*pi\*C\*fo);

f\_start = 100; f\_stop = 1000000;

step = (f\_stop - f\_start)/4096;

freq = f\_start:step:f\_stop;

Tf = K.\* (1-j.\*freq./fo)./(1+j.\*freq./fo);

Ms = 20\*log10(abs(Tf));

Ps = (180/pi)\*angle(Tf);

semilogx(freq,Ms),grid, axis([100 1000000 -10 30])

figure

semilogx(freq,Ps),grid

