

XRT Response Function Update 3

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CHIANTI

An Atomic Database for Spectroscopic Diagnostics of Astrophysical Plasmas.

CHIANTI 10.1 Preliminary Comparison

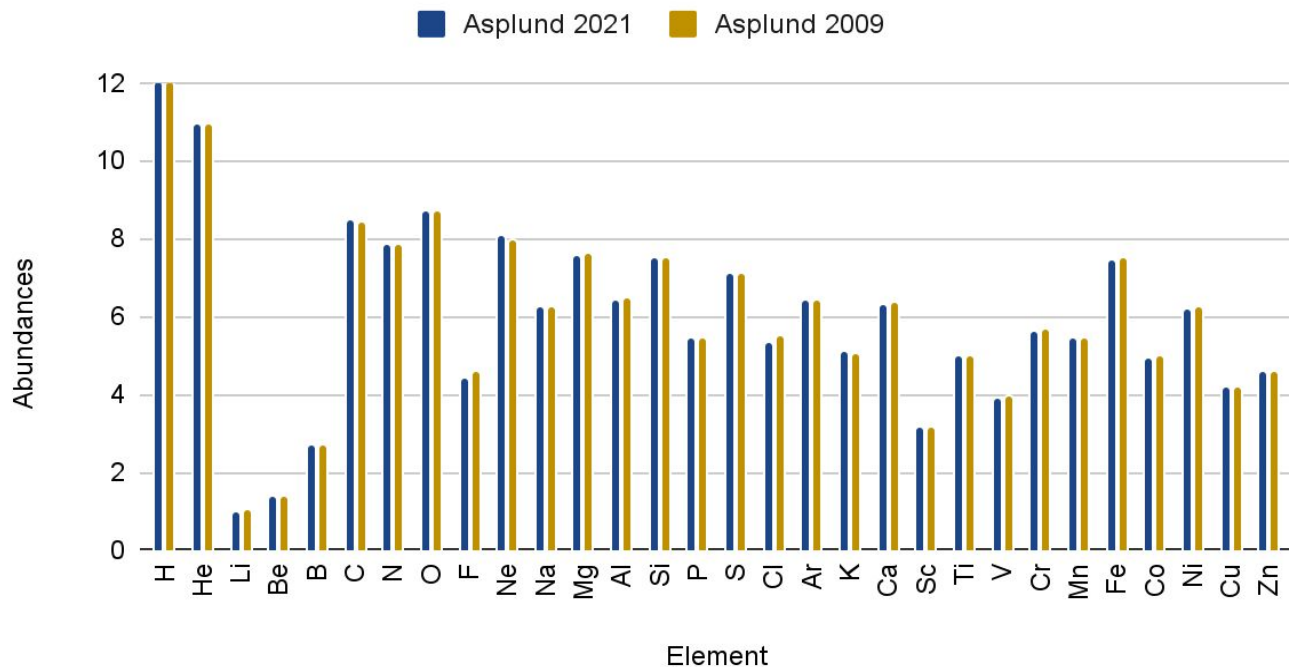
Version 2 and 3 Explained

Ver. 2: Once examined, we determined there was a bug in the codes we wrote to include straylight/filter contamination. Therefore, we examined the new files compared to the old files and determined that the CHIANTI 2021 corona should be between Feldman 1992 corona and Schmelz 2012 hybrid for response functions and Asplund 2021 and Scott 2015 should be similar as there was little change between the files. As a result, we returned to the original XRT flux programs and reran the temperature response and filter ratios.

Ver. 3: Pointed out recently was a mistake where we misread the new CHIANTI abundance file which discussed a difference of 0.5 to the abundances between the new corona and photospheric abundances. The abundances no longer have the 0.5 added and correspond with the expected results in the temperature response functions.

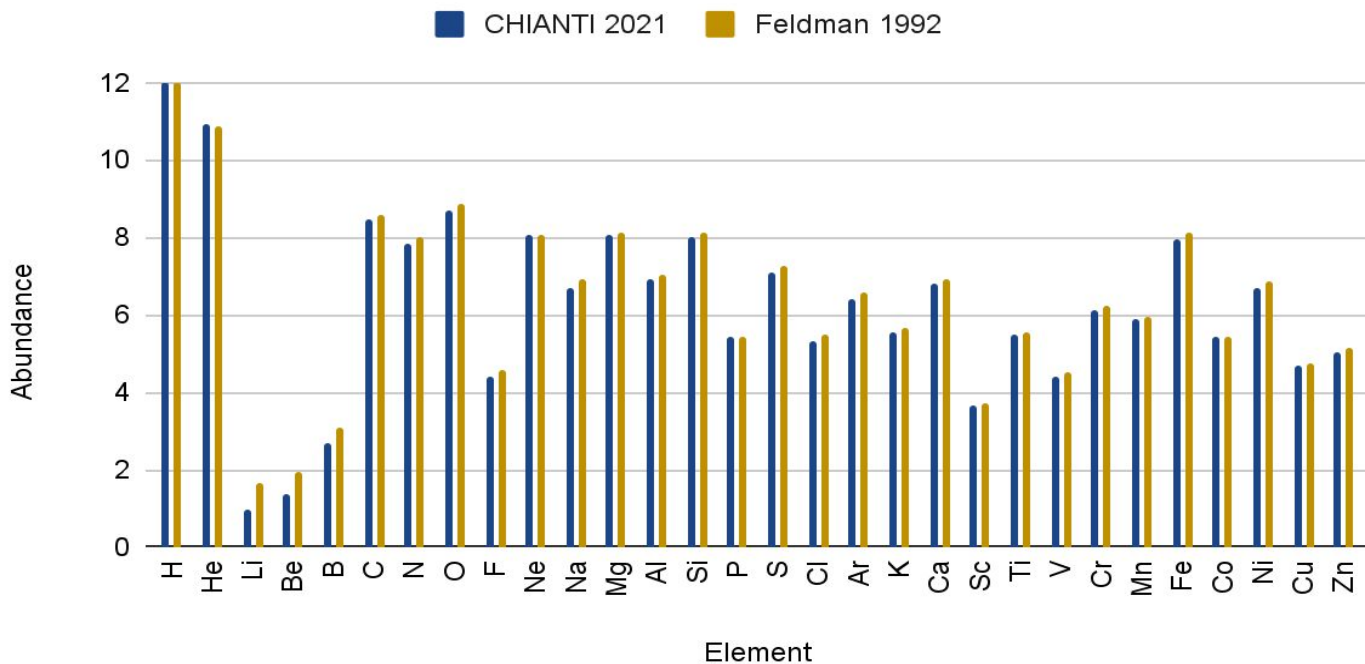
Photospheric Abundance Comparison

Photospheric Abundances Comparison



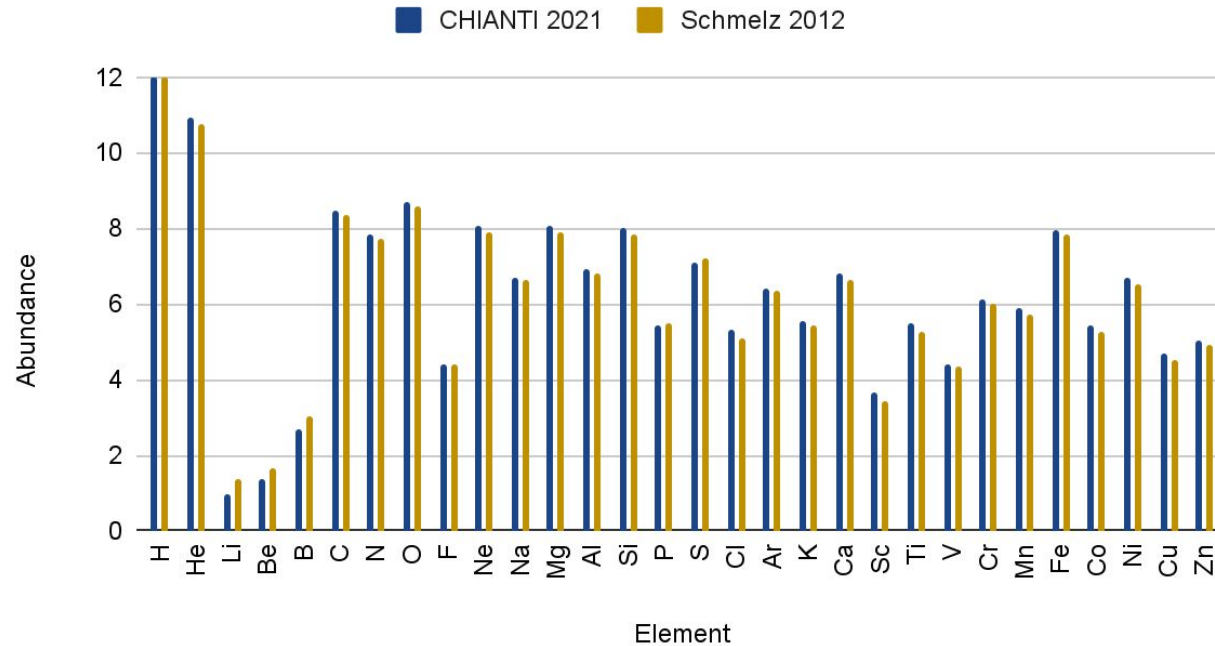
Coronal Abundance Comparison

Coronal Abundance Comparison



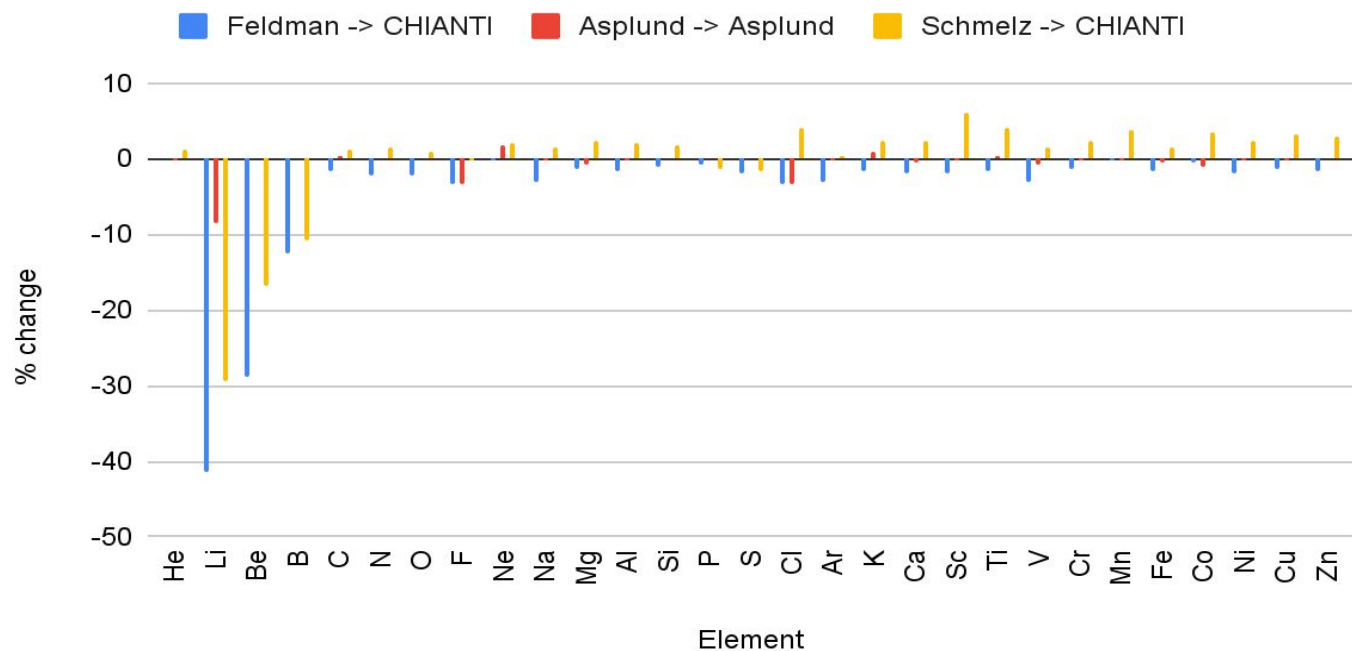
Corona to Hybrid Comparison

Hybrid vs Coronal Abundance Changes



Percent Changes of Abundances

% change vs. Element



Modified Temperature Response Functions and Flux Ratio

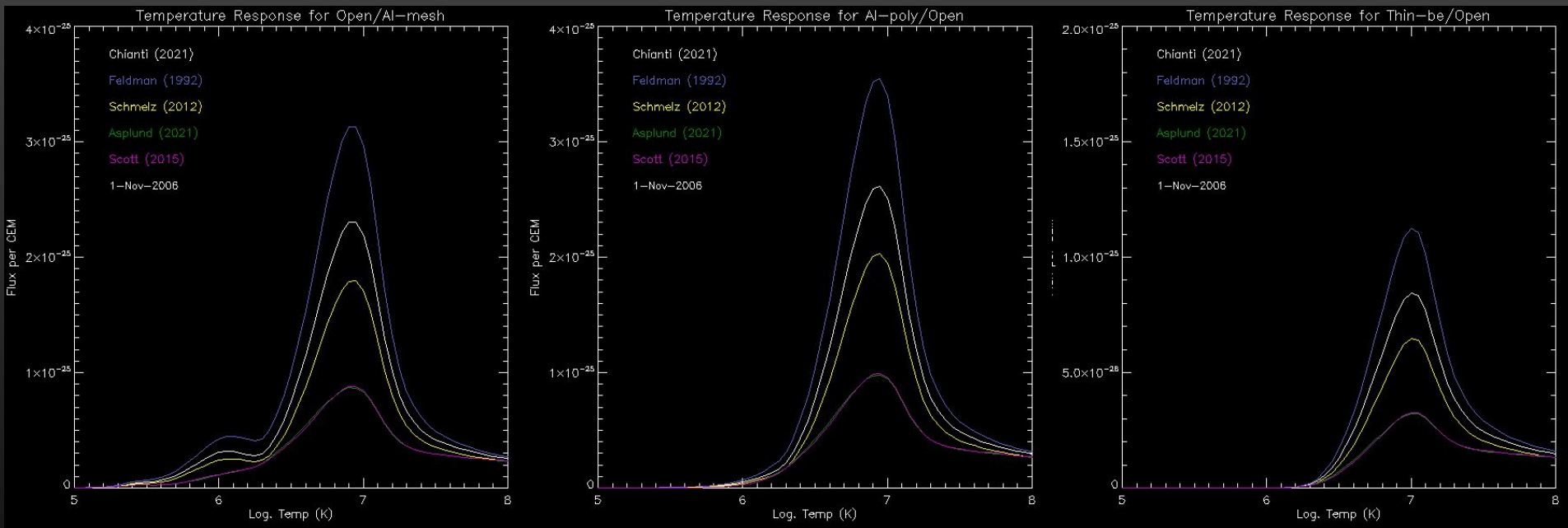
Program Specifications:

- Filters considered as launched according to Narukage-san's 2011 report
 - No new filter contamination
 - Flux calculated as filters where on 1-Nov-2006
- There is no straylight contamination

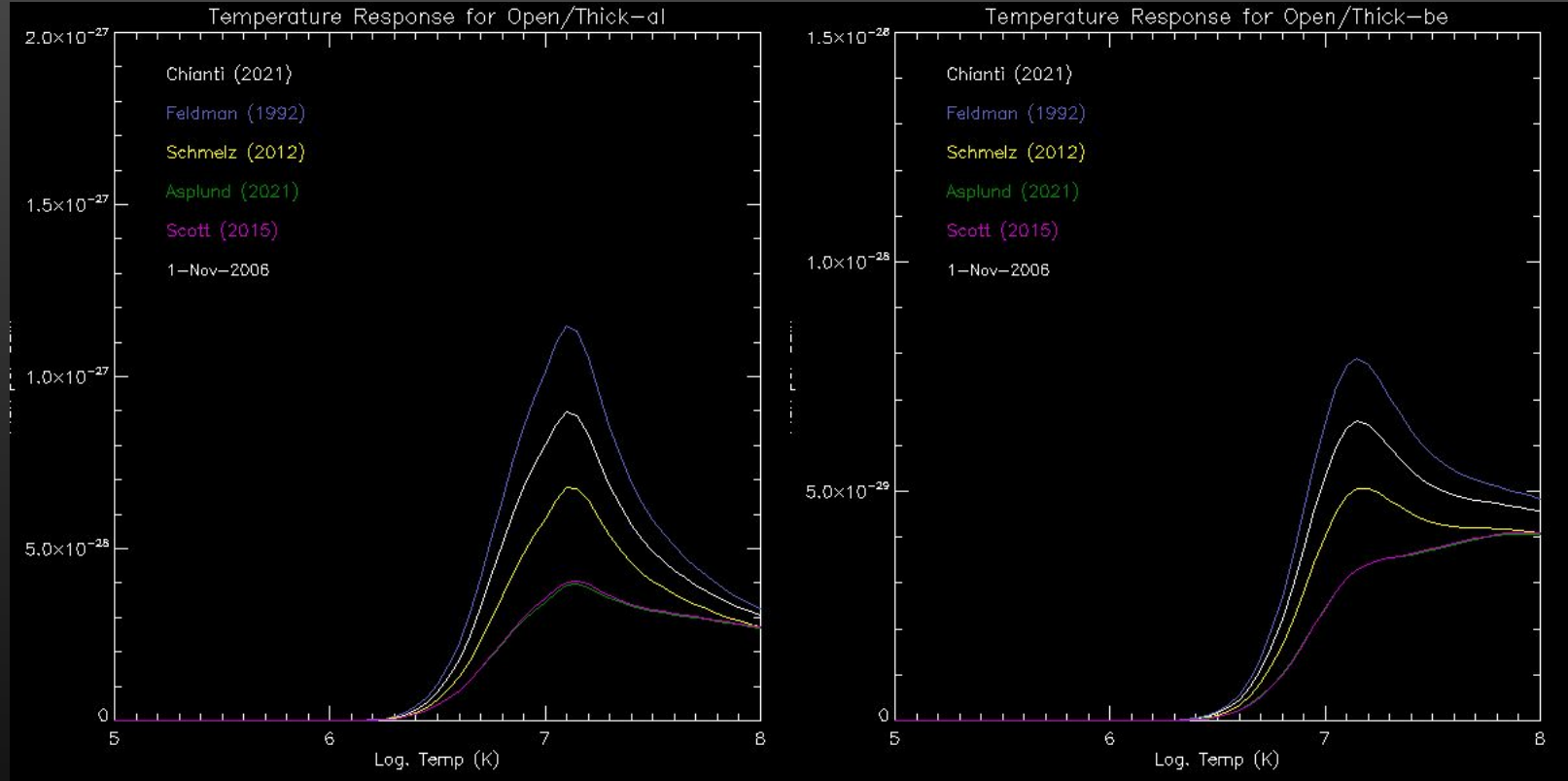
Calculation Method:

- Create solar spectrum using CHIANTI abundance file and ion equilibrium file
- Using CHIANTI spectrum and XRT effective area function to calculate flux
- Temperature Response: Take flux result and plot versus log temperature
- Filter Ratio: Take two different filter flux results and divide by the thicker filter to find the ratio

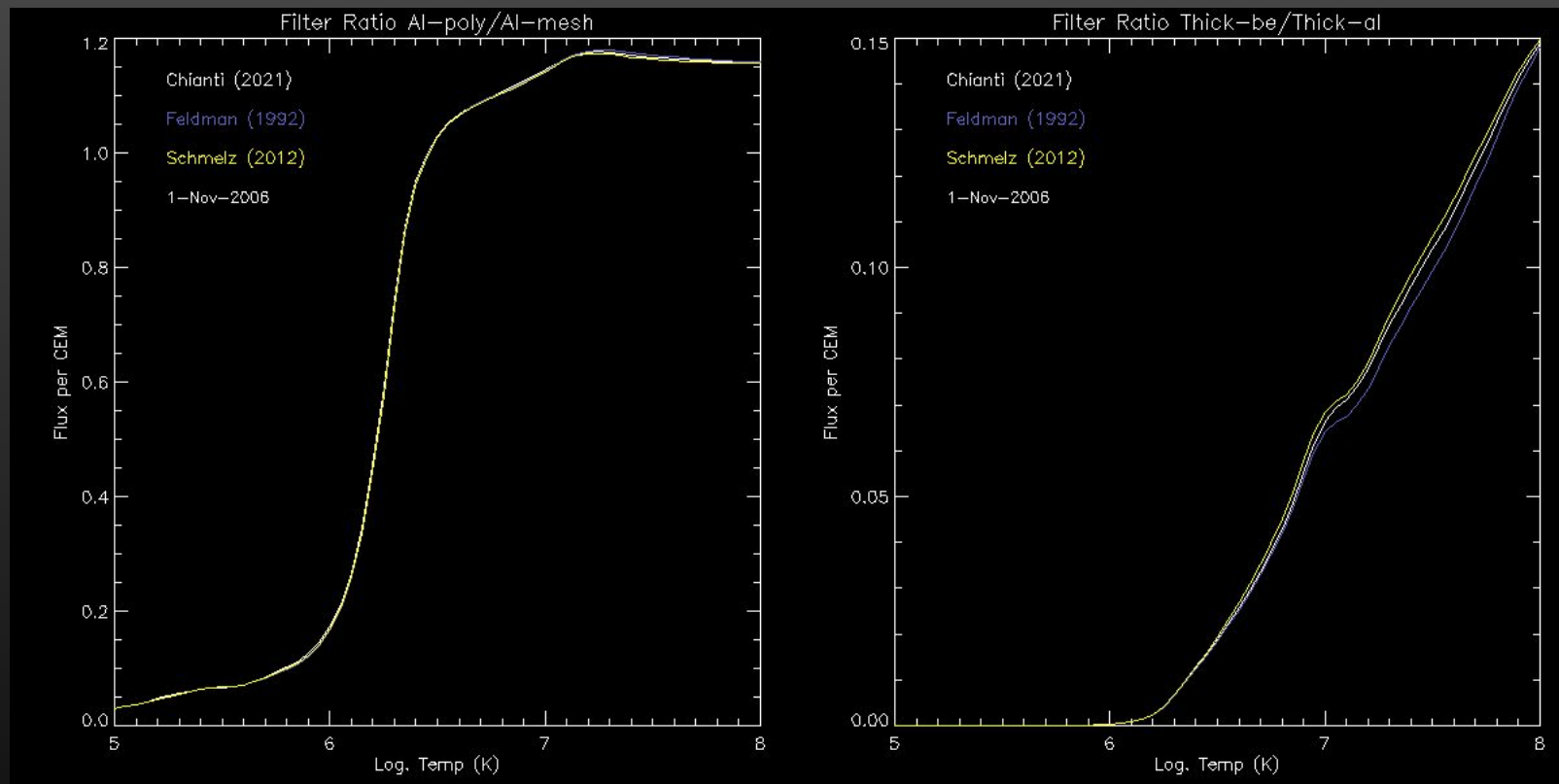
Updated Temperature Response Functions (synoptic filters)



Updated Temperature Response Functions (flare filters)

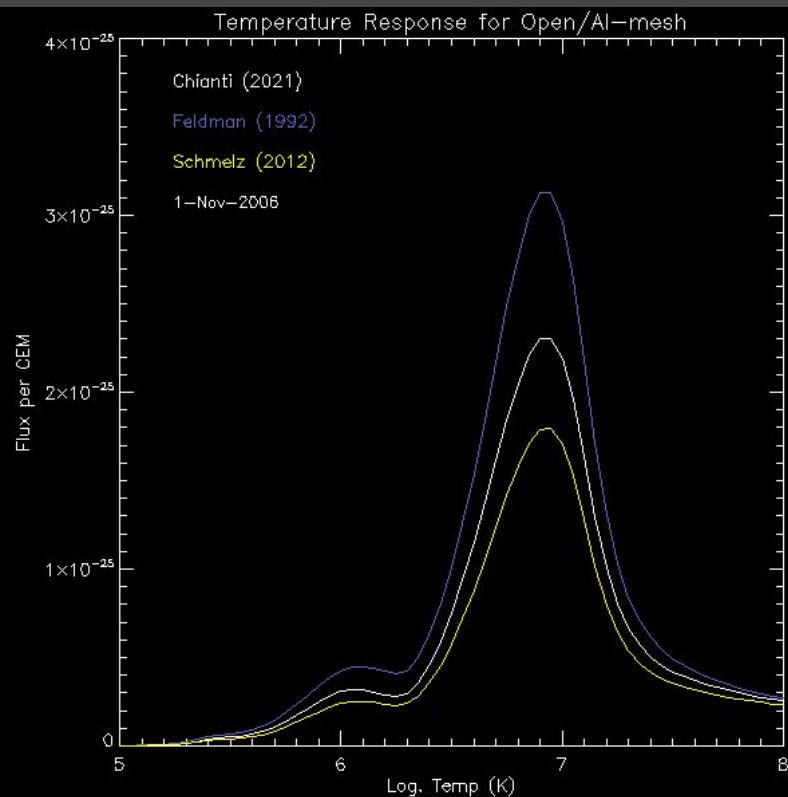
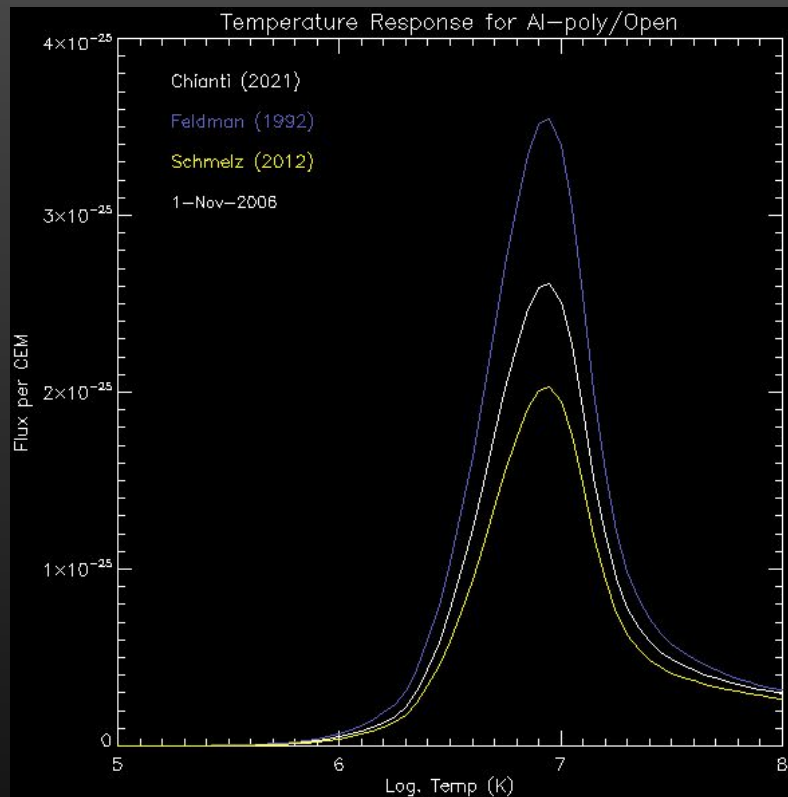


Filter Ratios

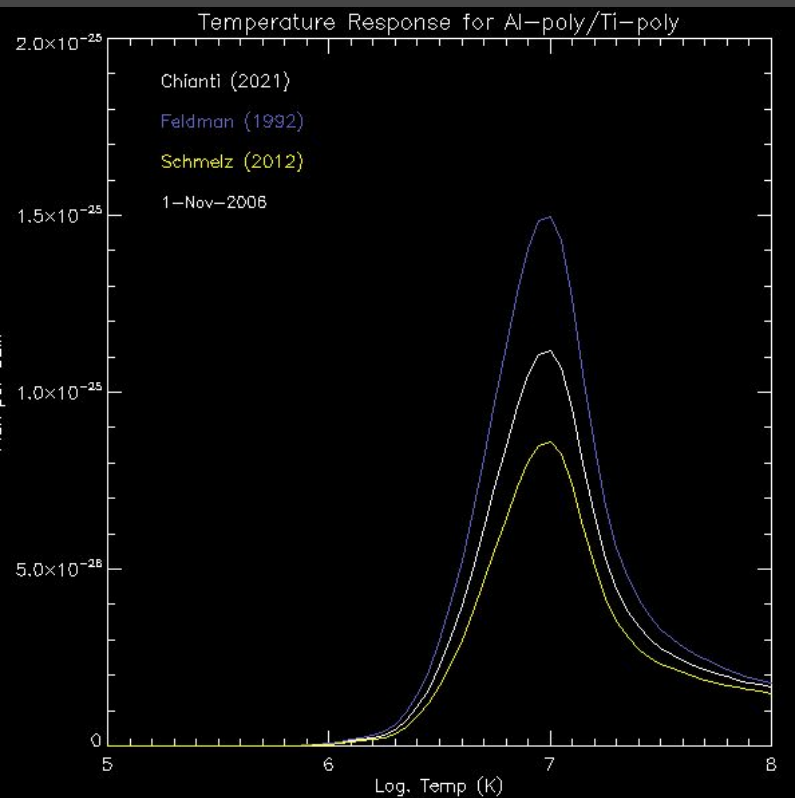
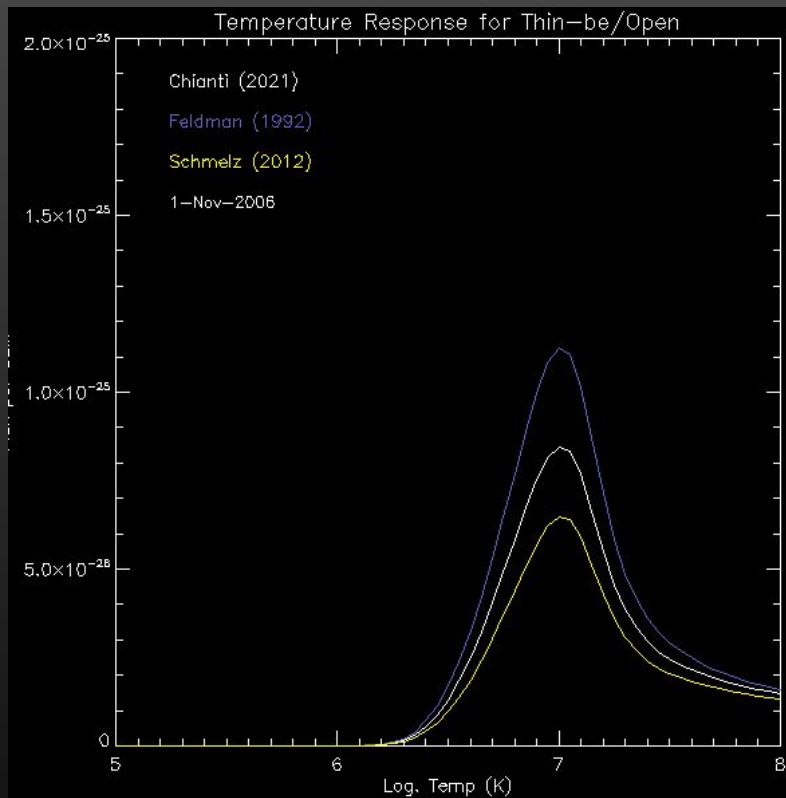


XRT Filter Changes

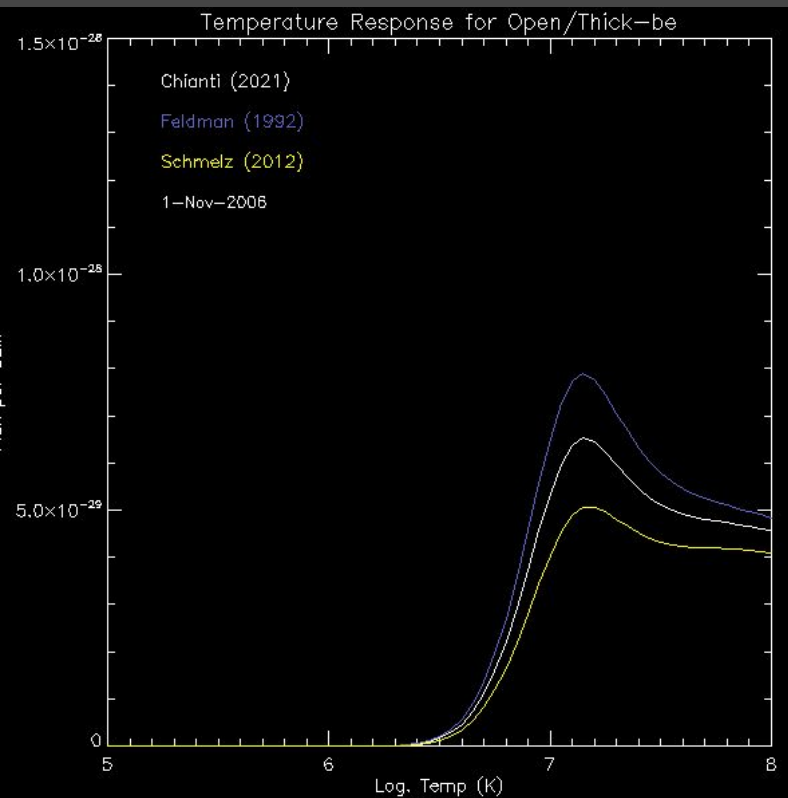
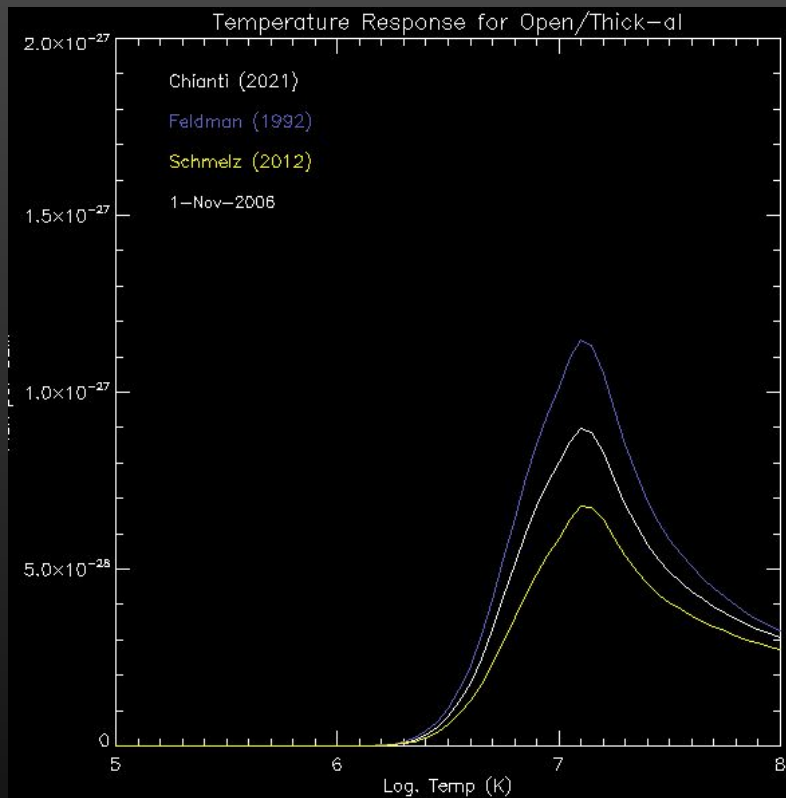
Synoptic Filters



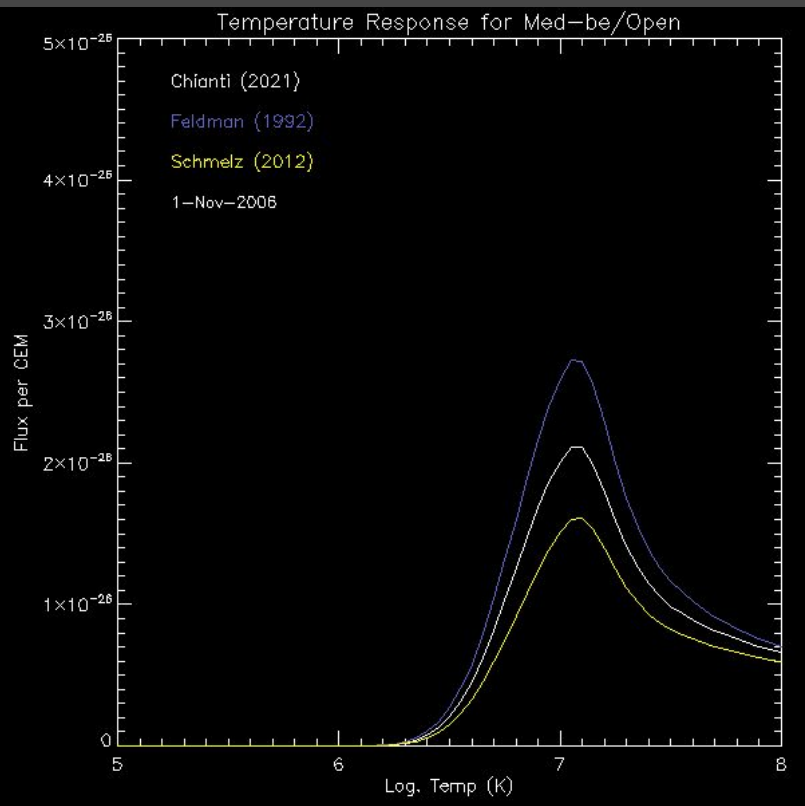
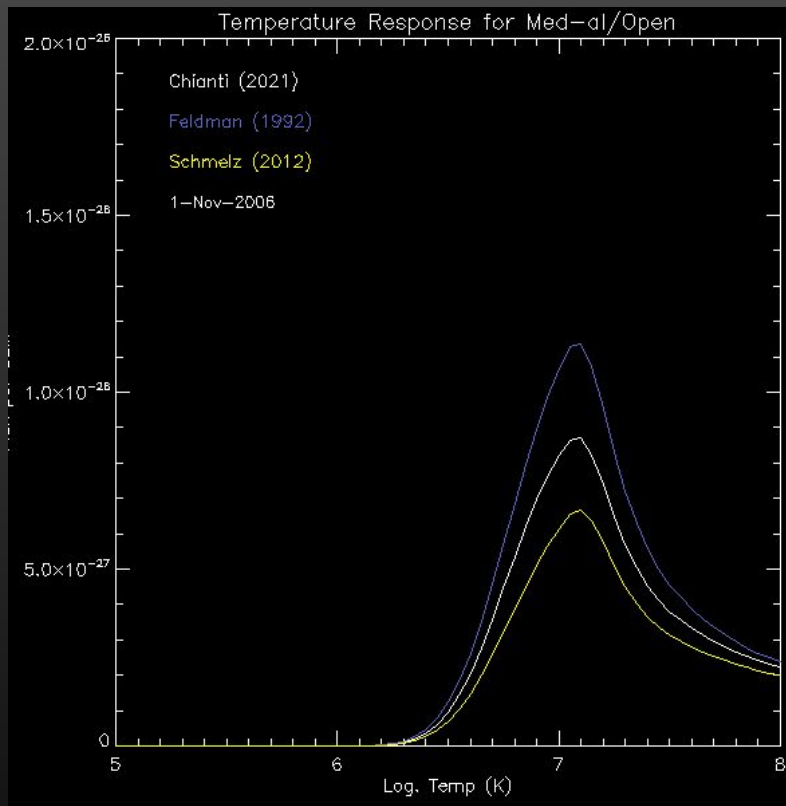
Synoptic Filters Cont.



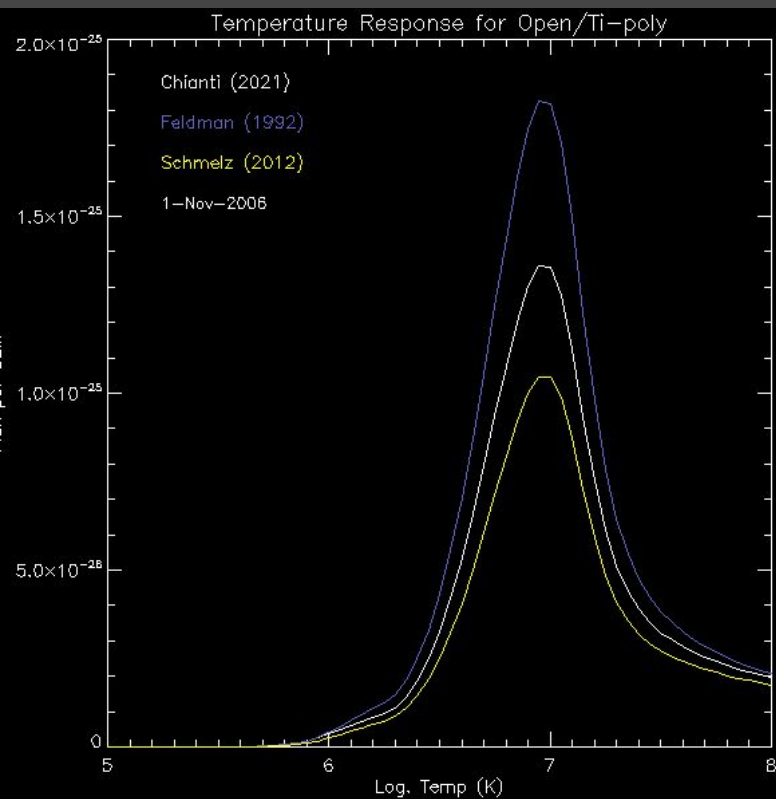
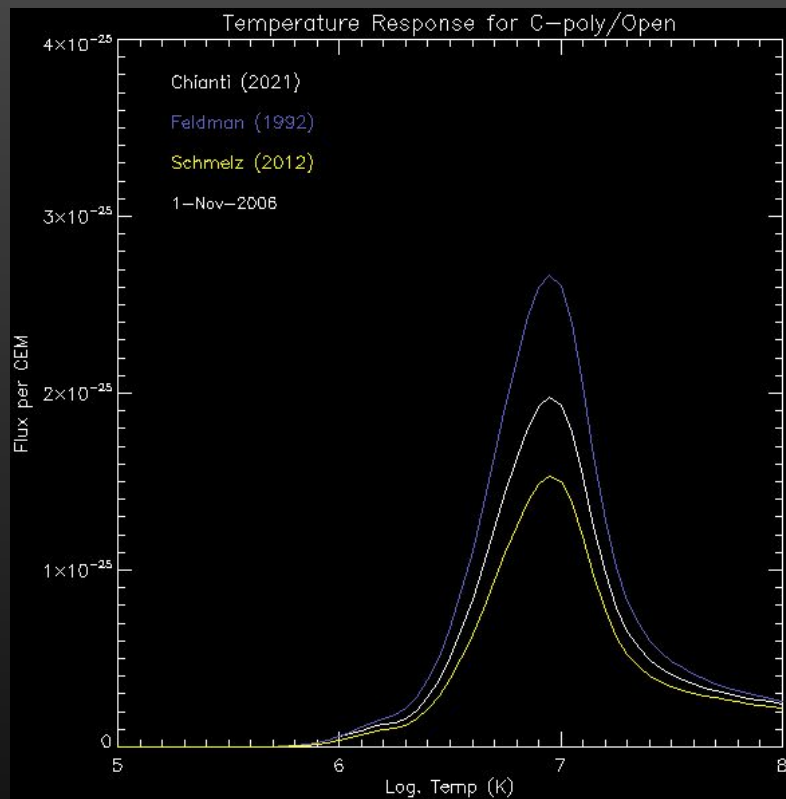
Thick Flare Filters



Medium Flare Filters

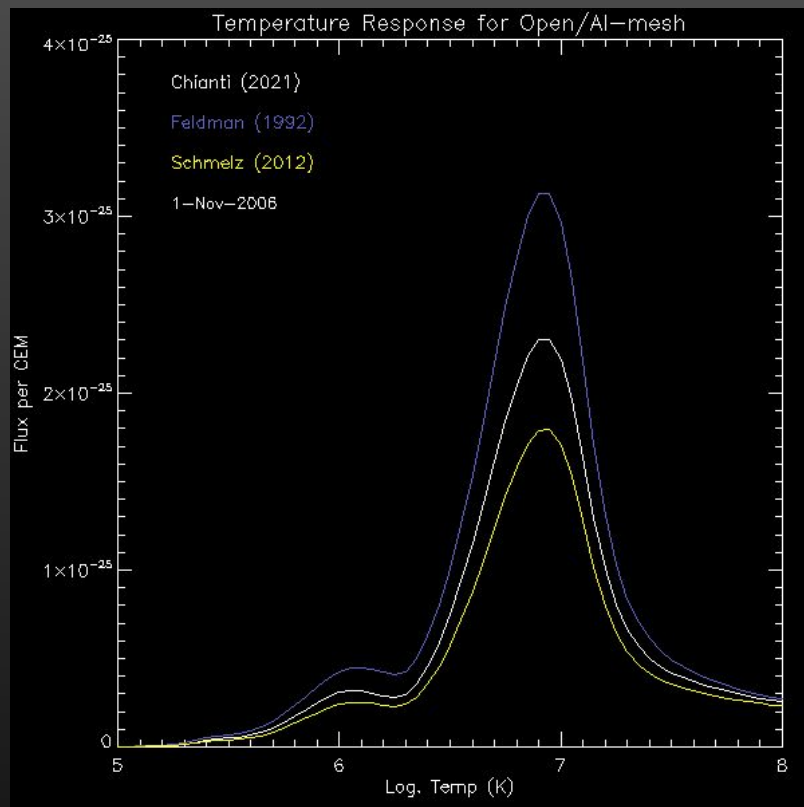


Retired Filters

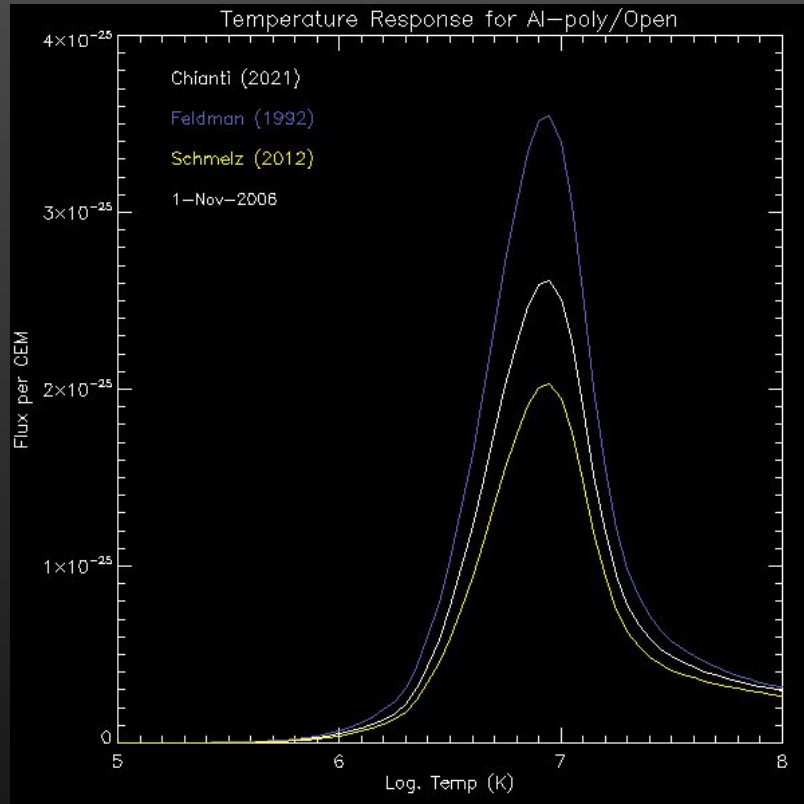


Thank you, all!

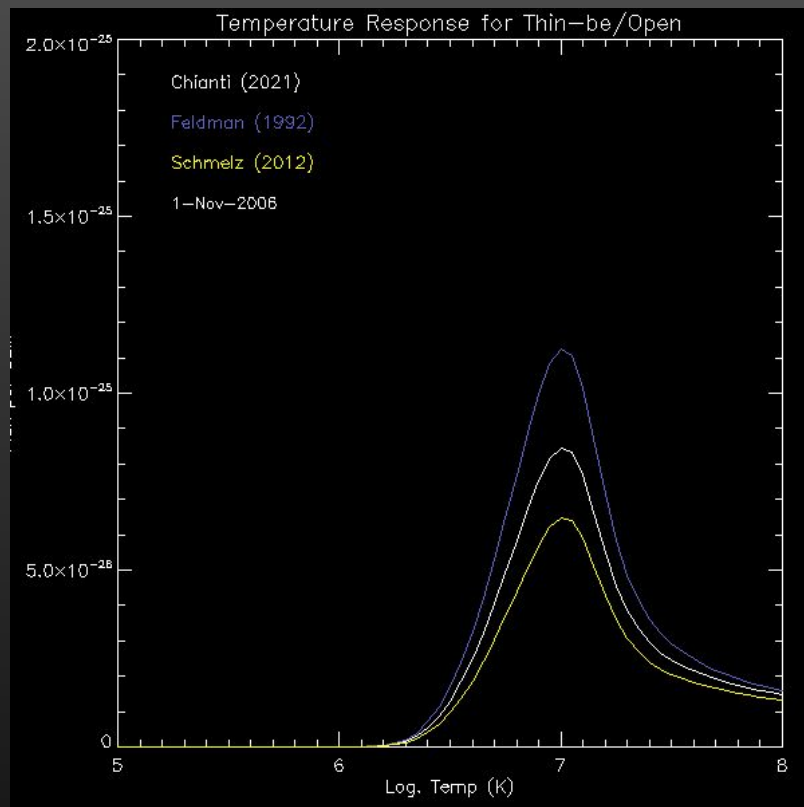
Al-mesh



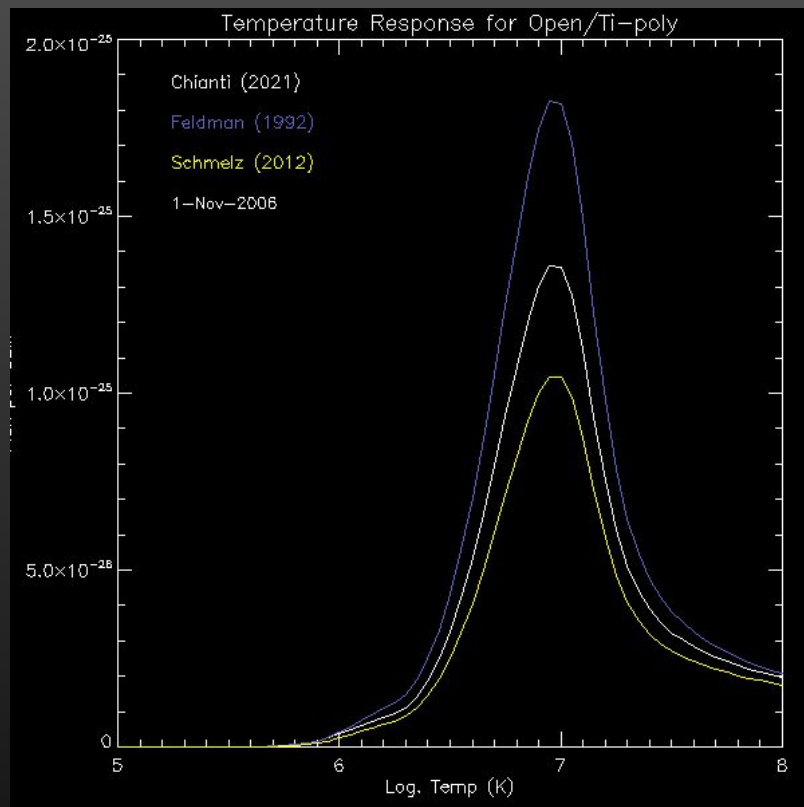
Al-poly



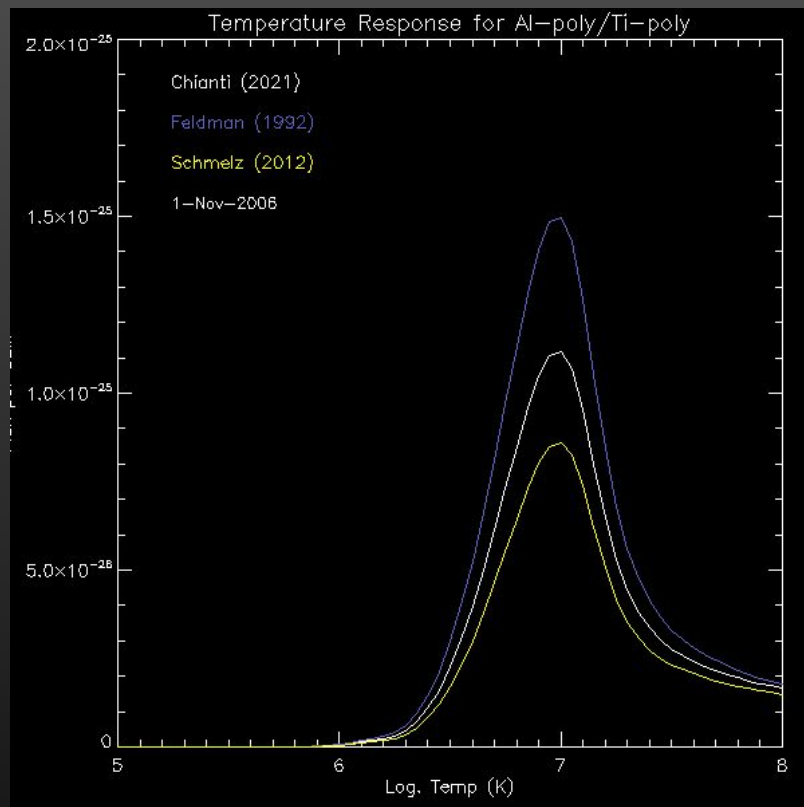
Thin-Be



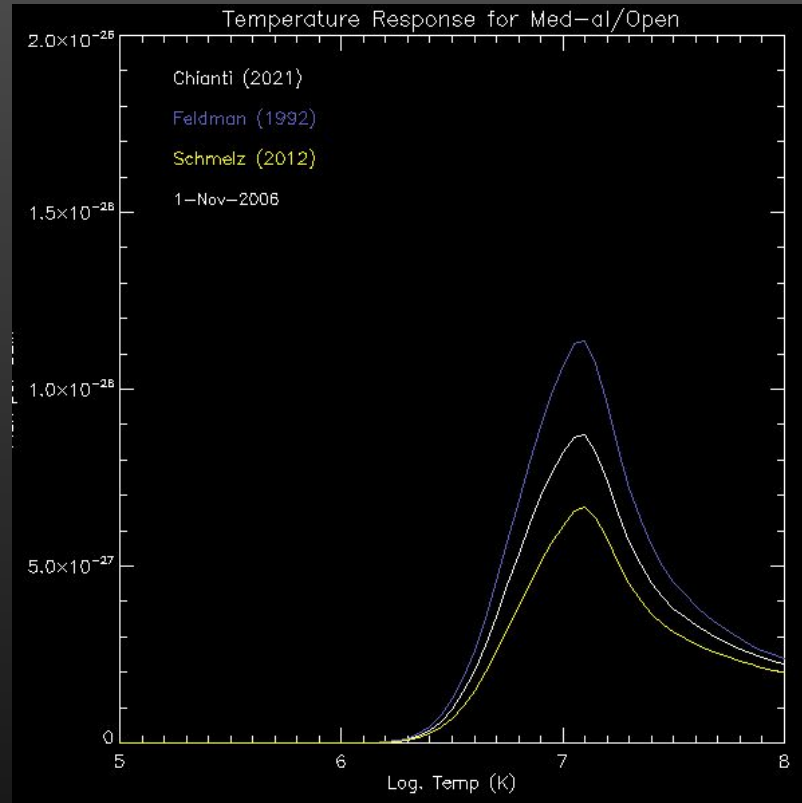
Ti-poly



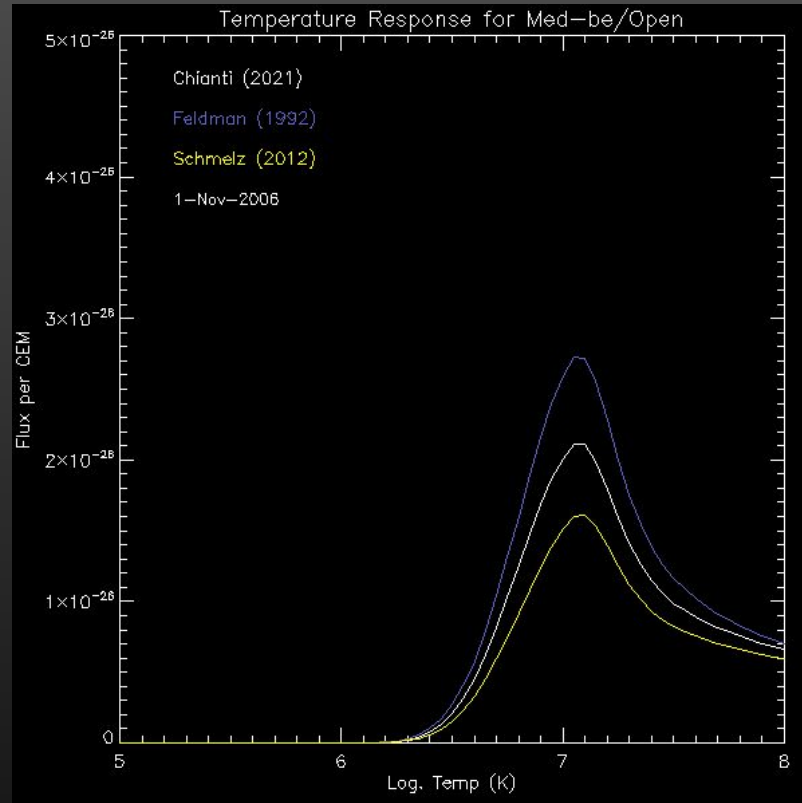
Al-poly/Ti-poly



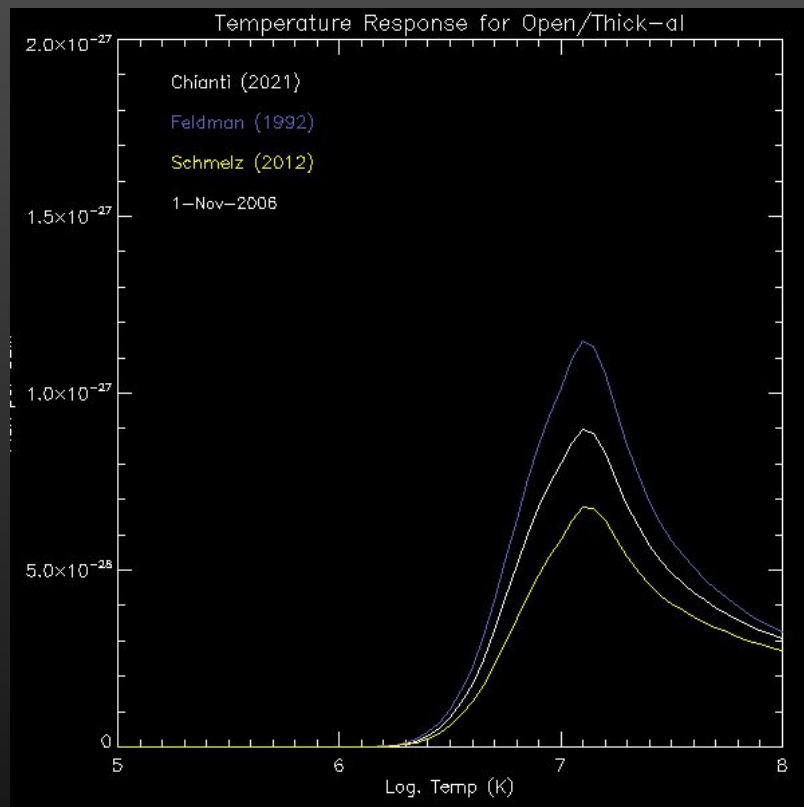
Med-AI



Med-Be



Thick-Al



Thick-Be

