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Rate constants for the formation of SiO by radiative association\textsuperscript{1}
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High quality molecular data for the low-lying states of SiO are computed and used to
calculate rate constants for radiative association of Si and O. Einstein A-coefficients
are also calculated for transitions between all of the bound and quasibound levels
for each molecular state. The radiative widths are used together with elastic tunnel-
ing widths to define effective radiative association rate constants which include
both direct and indirect (inverse predissociation) formation processes. The indirect
process is evaluated for two kinetic models which represent limiting cases for
astrophysical environments. The first case assumes an equilibrium distribution of
quasibound states and would be applicable whenever collisional and/or radiative ex-
citation mechanisms are able to maintain the population. The second case assumes
that no excitation mechanisms are available which corresponds to the limit of zero
radiation temperature and zero atomic density. Rate constants for SiO formation in
realistic astrophysical environments would presumably lie between these two limiting
cases.

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