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### Chemical Said Song

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## CHEMICAL SAID SONG

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### CHEMICAL SAID SONG

A hot spell in a resistance furnace  
then 30 to 60 days of annealing at 450° C, after which  
the welded shut iron crucible is cracked,  
spilling its dusky powders, also  
a refractory blackness  
that has to be pried out,  
some shiny crystals  
stuck in the vugs; the purest  
calcium, copper and gallium  
is what they loaded  
in, and now  
the Genovese workers fish out twelve compounds,  
pick on rhombohedral platelet to mount  
on this hundred-thousand dollar  
Enraf-Nonius CAD-4 diffractometer,  
but the crystal doesn't give  
the nice sharp X-ray diffraction pattern it should,  
so they pick  
a more perfect prism, feed the data  
into a supercomputer  
and a week of refinement later  
it spews out the coordinates  
of this pretty incredible molecule—  
copper lines stitched into sheets  
by bridging, isolated galliums, the sheets  
sandwiching calcium ions – pretty enough  
to catch my eye when I see it

in the Journal of the Less Common Metals, a neat puzzle  
in its rows of marching atoms,  
but not too strange  
to ask Christian, a German postdoc  
to do some calculations  
on just this compound  
out of the twelve; sure enough,  
we explain the electronic structure and  
all those intimacies  
of copper-copper bonding,  
and write a paper  
replete with band structures, orbitals, and densities of states  
spilling neatly from page to page; we also  
come across a gold-potassium alloy  
with a like structure,  
which makes us happy  
because we know that everything  
is connected to everything else,  
and it rounds out the paper; but really  
we should have worried  
about those eleven other compounds,  
and God knows how many they didn't isolate,  
or that will be made one day  
when someone uses slightly different conditions,  
the copper-gallium lattices  
trying out  
different stoichiometries  
and superstructures,  
the wondrous addled richness  
of the irreducible world.

“Said Song” is a southern (North Carolina) term for a kind of singsong story.