

Evolution of the combinatorial strategy (and a future forecast)

Circa 1990

2000

2010

2017 and beyond

Challenges:

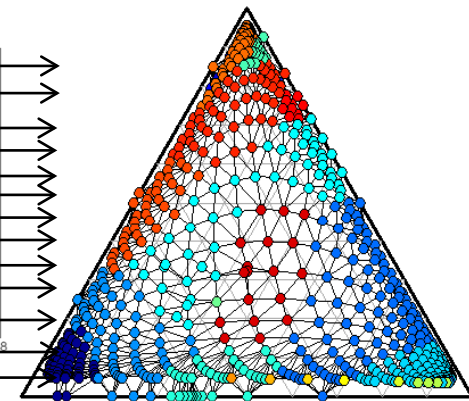
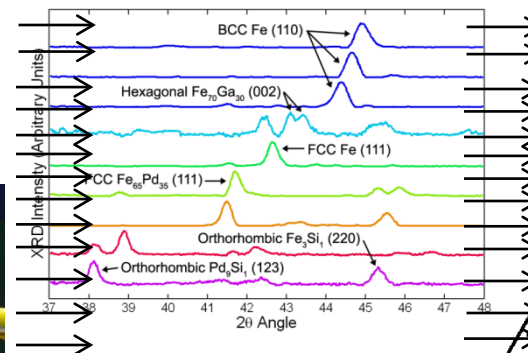
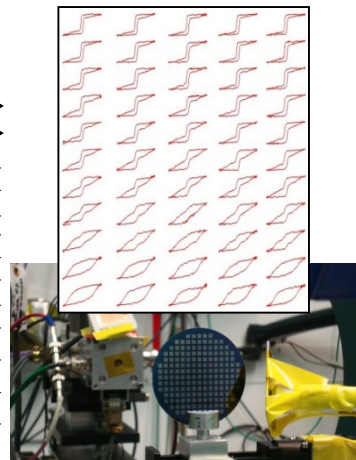
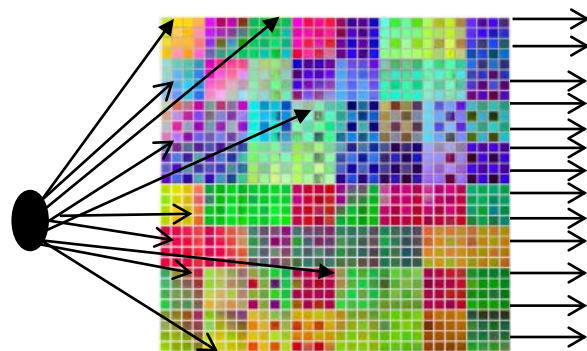
How to make
hundreds of samples
fast

How to measure
large number of
samples: speed,
number and
quantitative accuracy

How to quickly
analyze large
amount of data

Machine learning
to control and
reduce number
of samples

of samples:
x 100-1000

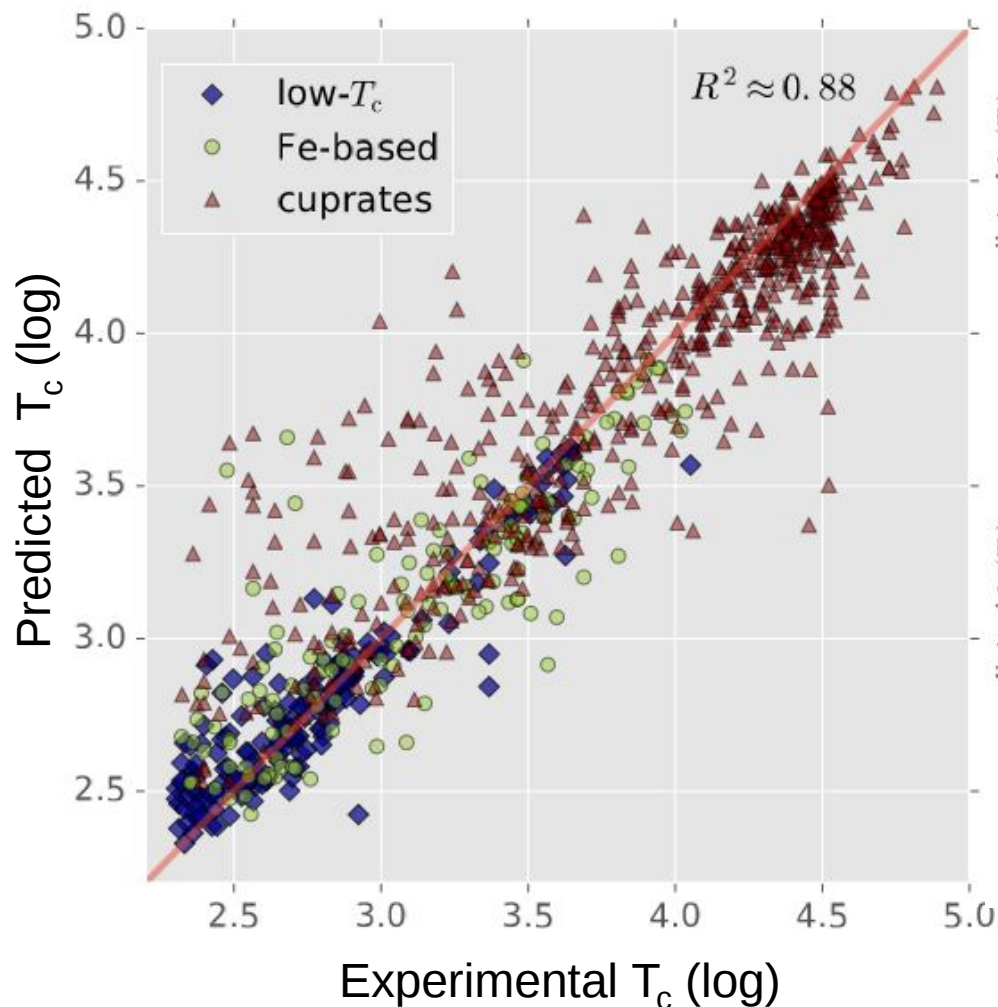


of samples: x 0.1 – 0.2

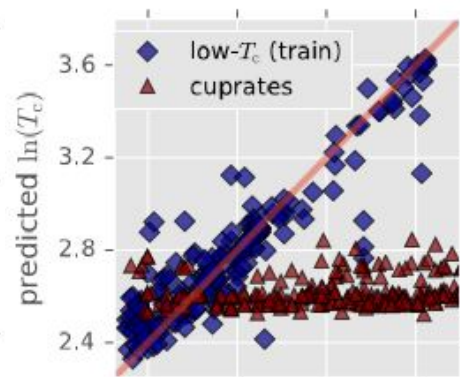
of samples: x 0.1 – 0.2 Reducing the number of data points

Machine learning modeling of superconducting critical temperature (Data mining of experimental database (SuperCon))

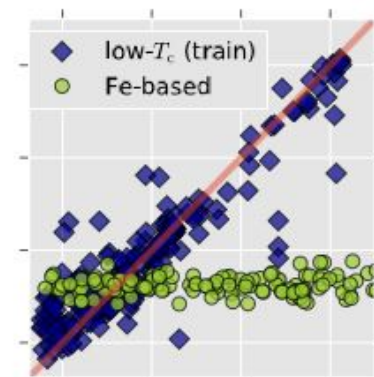
Overall prediction accuracy is pretty good



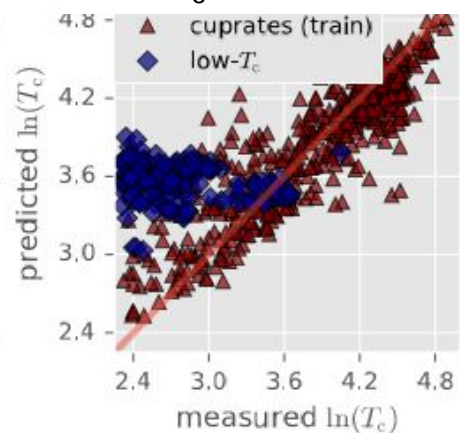
Low T_c vs cuprates



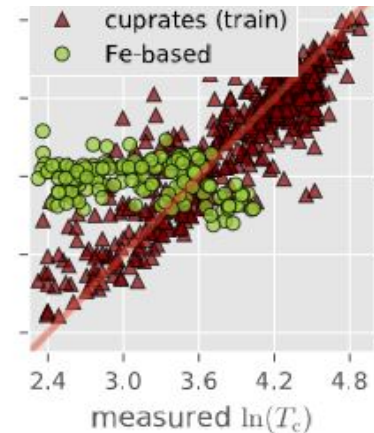
Cuprates vs low T_c



Low T_c vs Fe-based



Cuprates vs Fe-based



Different classes of superconductors
can be distinguished