

Concurrent materials design

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EP14153898.3; US 2014/177578; GB1302743.8

EP14161255.6; US 2014/223465; GB1307533.8

EP14161529.4; GB1307535.3

EP14157622.3; amendment to US 2013/0052077 A1; GB1408536.9

Acta Materialia **61**, 3378 (2013)

Intermetallics **48**, 62 (2014)

Theory of Condensed Matter Group, Department of Physics

Materials pipeline



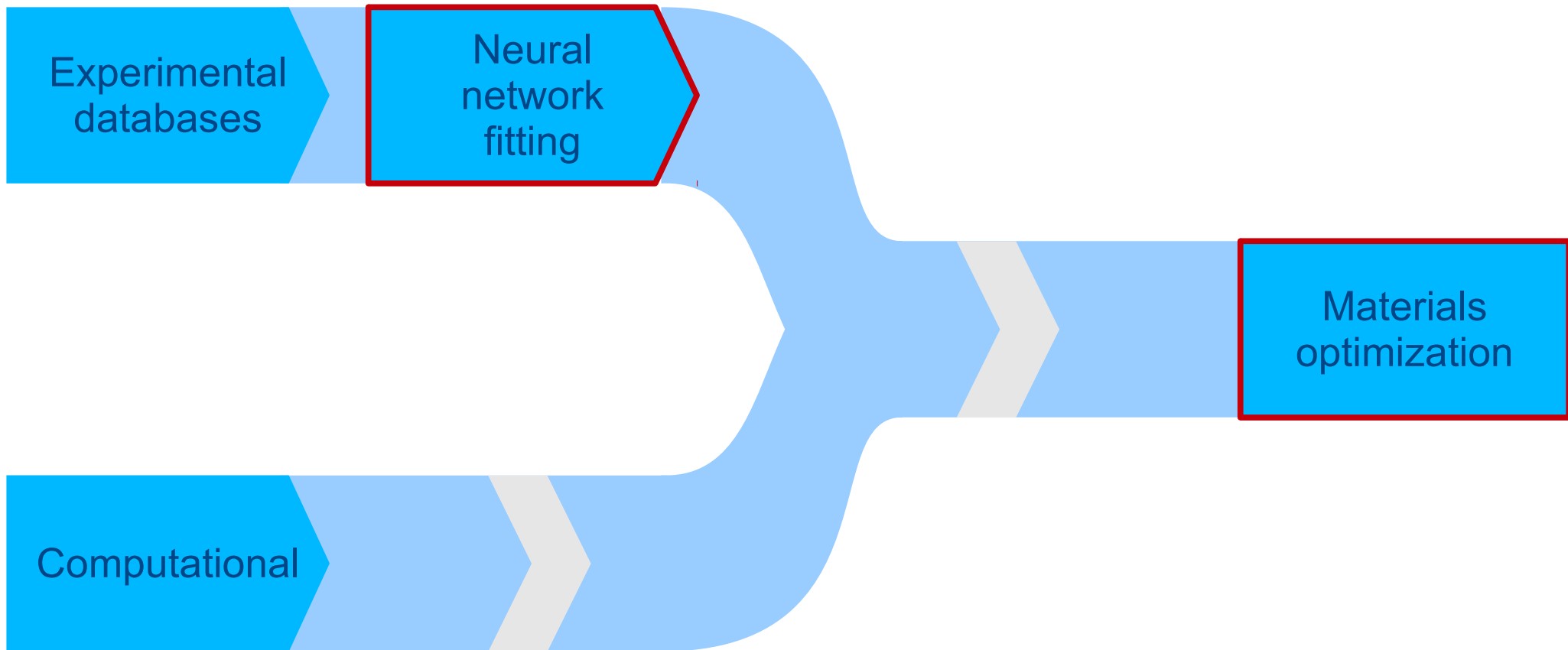
The diagram illustrates a materials pipeline. It features two parallel horizontal paths on the left, one labeled 'Experimental databases' and the other 'Computational'. These paths merge into a single, wider path that leads to a final box on the right labeled 'Materials characterization'. The paths are represented by blue and light blue shapes with chevron-like details, suggesting a flow or integration process.

Experimental
databases

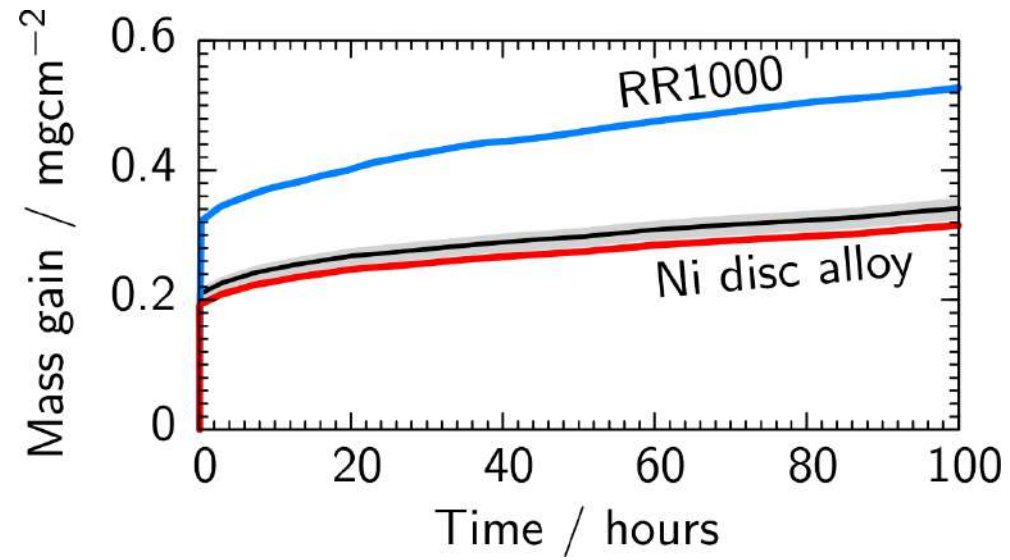
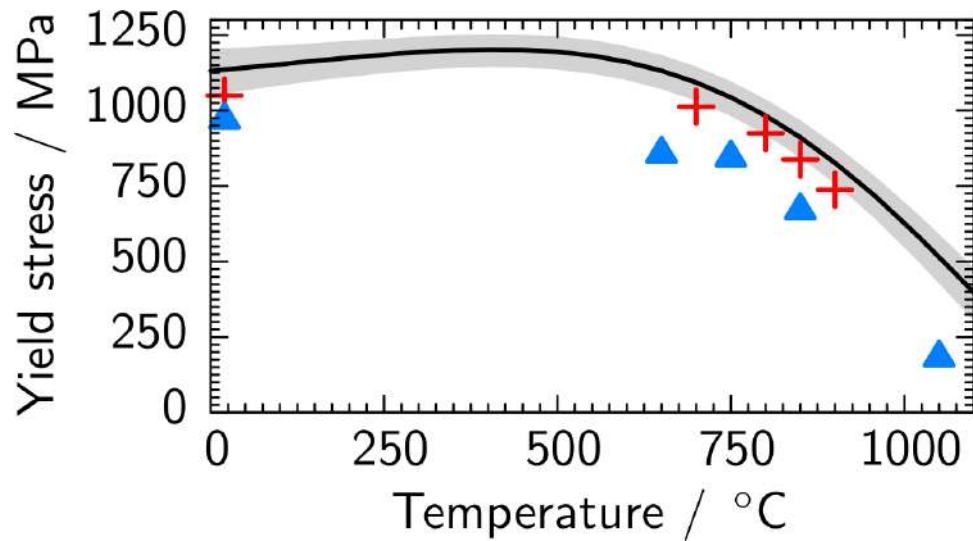
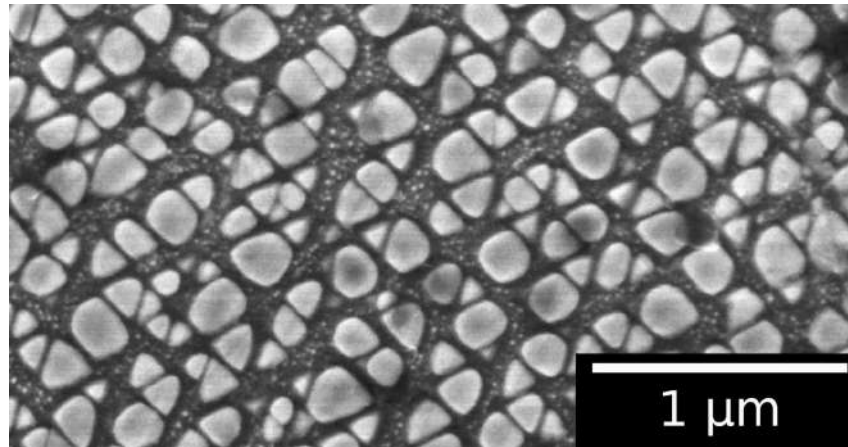
Computational

Materials
characterization

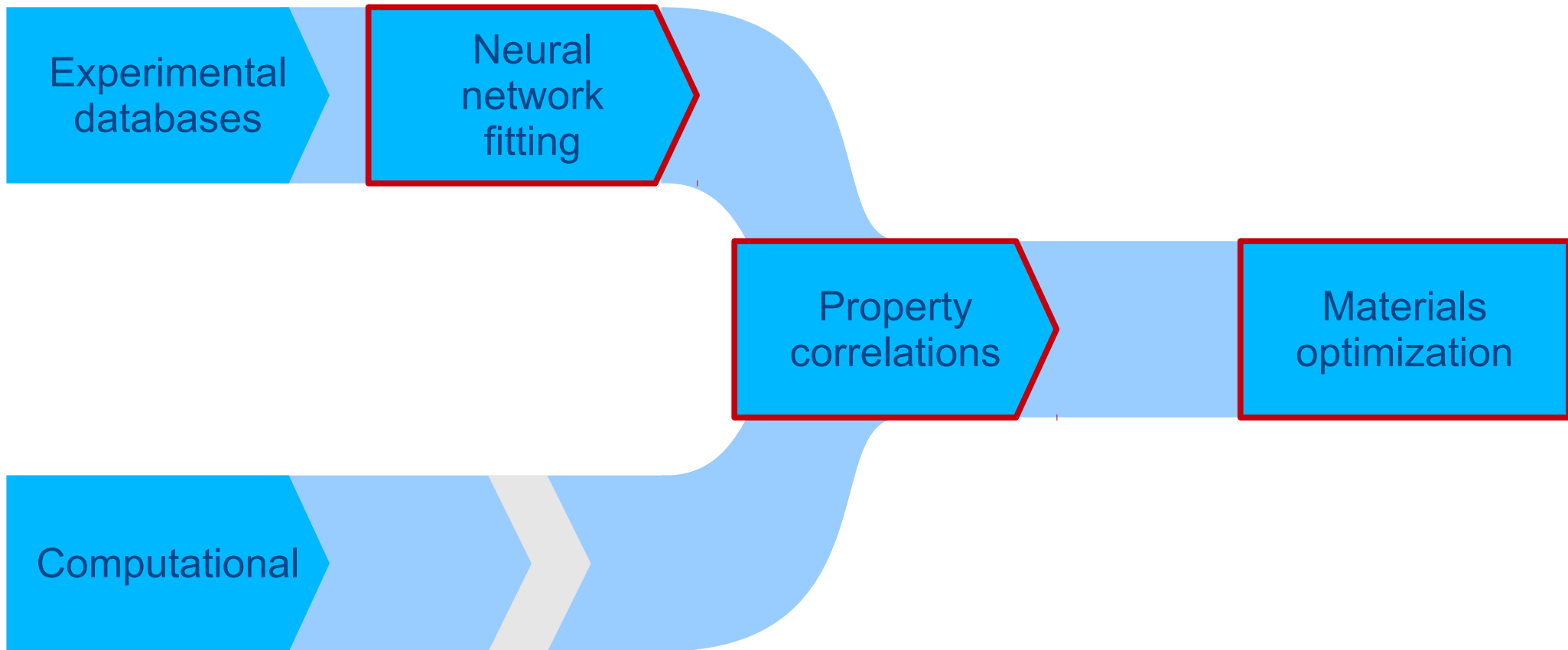
Two new tools



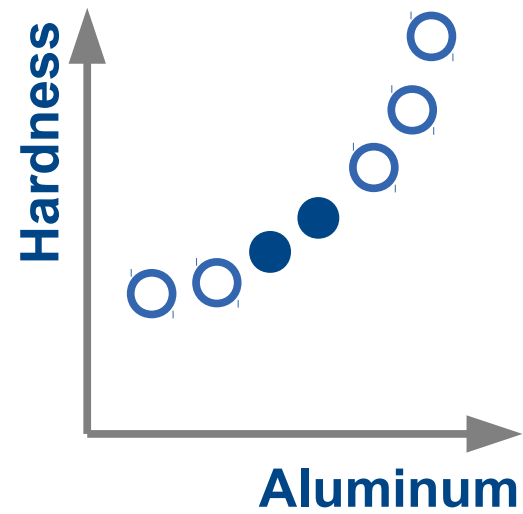
Ni-base superalloy



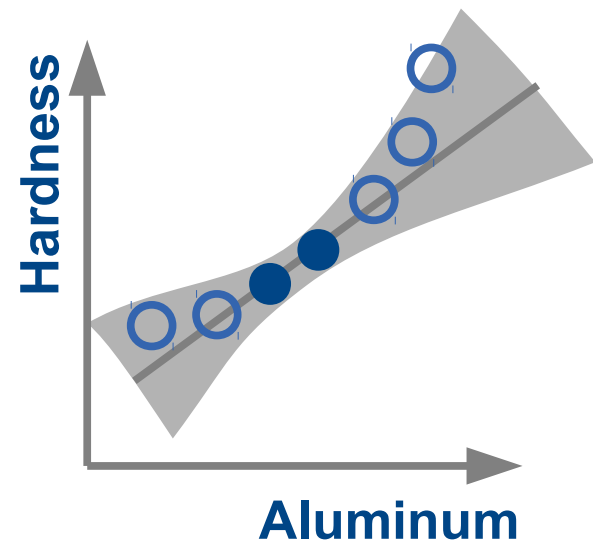
Three new tools



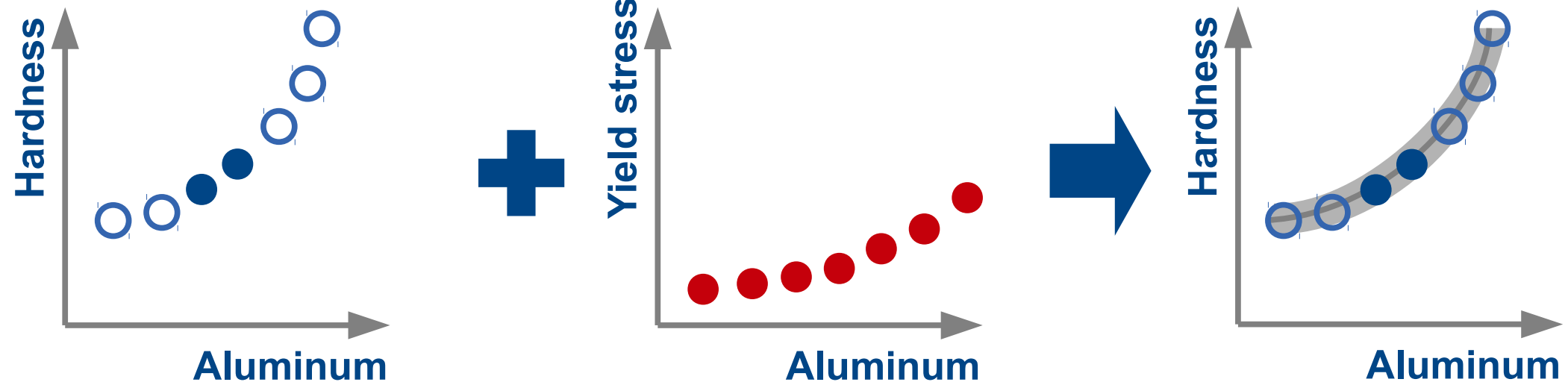
Correlations between properties



Correlations between properties



Correlations between properties

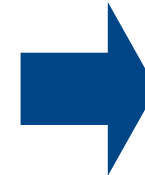


Exploiting correlations: 3D printing

**7 points for
3D printability**

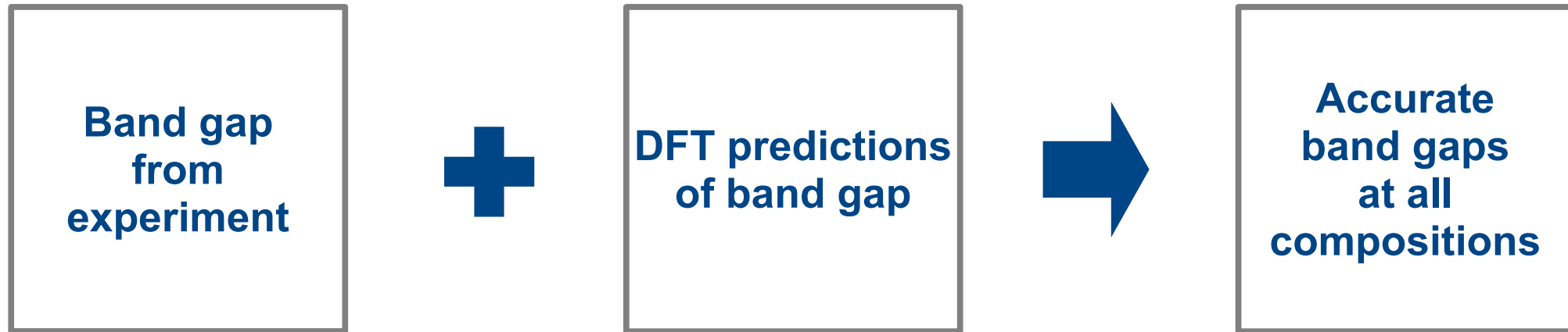


**Weldability
Heat capacity
Conductivity
Precipitates**

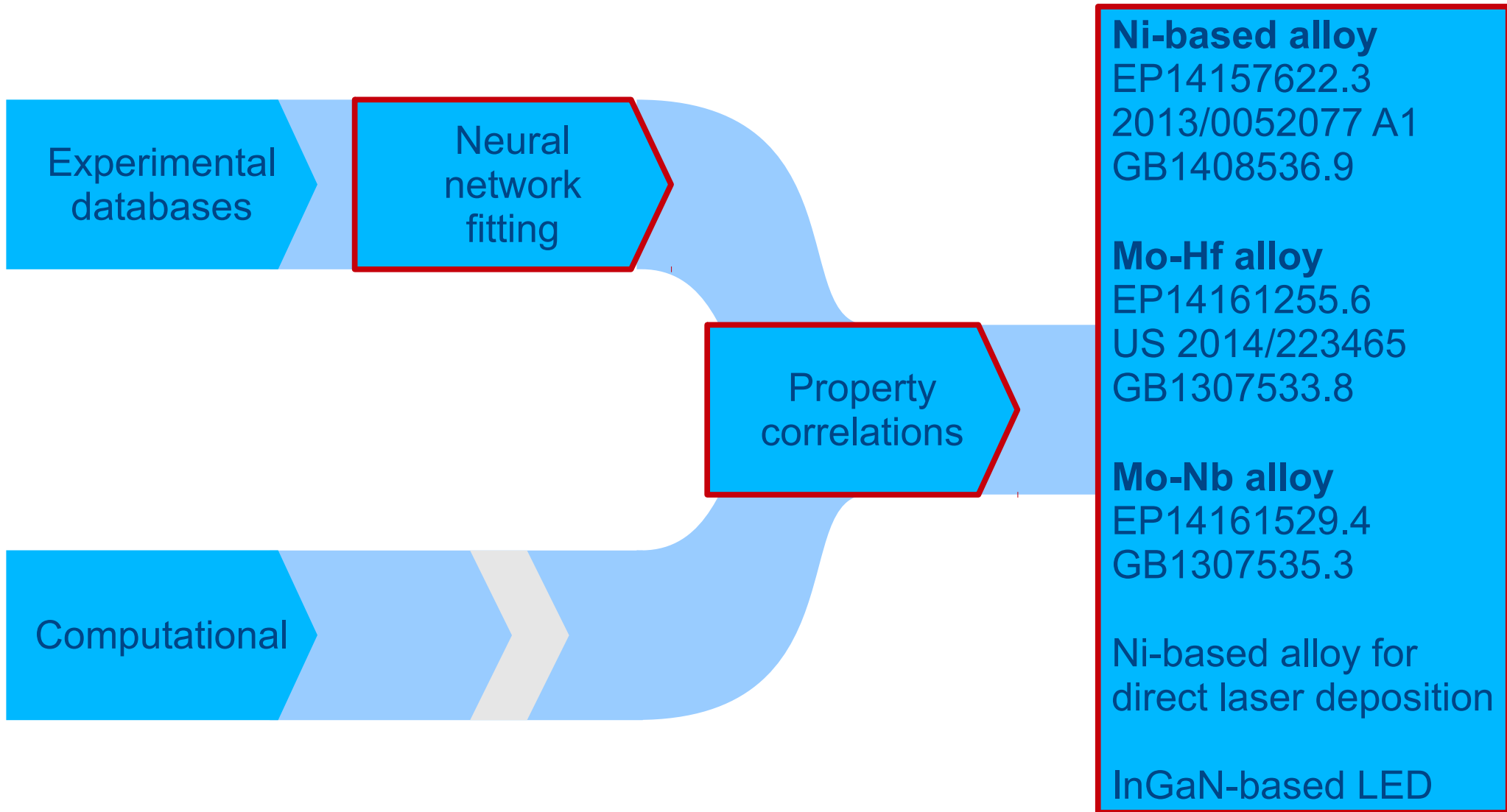


**Accurate
predictions for
3D printability**

Exploiting correlations: LEDs



Three new tools



Prospects in the future

Combine strengths of experimental databases with first principles approaches

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