

# Preface

The concept of clique-width of graphs has attracted much attention in recent years. This is motivated by the fact that a lot of NP-hard problems expressible in a variant of Monadic Second Order Logic have efficient algorithm when restricted to graphs of bounded clique-width. Another fact that makes the study of clique-width attractive is that the notion of clique-width is ‘more powerful’ than the notion of treewidth: Graphs of bounded treewidth have bounded clique-width.

This thesis deals with new and very restricted classes of graphs of unbounded clique-width and with new classes of graphs of bounded clique-width. Most of the new classes of graphs of bounded clique-width generalize the popular class of cographs in a natural way. Results presented in Chapters 4–7 are taken from the following papers and manuscripts:

- Andreas Brandstädt, Hoang-Oanh Le, Jean-Marie Vanherpe, “Structure and Stability Number of Chair-, Co-P-, and Gem-Free Graphs Revisited”, *Information Processing Letters* 86 (2003) 161-167.
- Andreas Brandstädt, Hoang-Oanh Le, Raffaele Mosca, “Chordal Co-gem-Free and  $(P_5, \text{Gem})$ -Free Graphs Have Bounded Clique-Width”, *Discrete Applied Mathematics*, accepted.
- Andreas Brandstädt, Hoang-Oanh Le, Raffaele Mosca, “(Gem, Co-gem)-Free Graphs Have Bounded Clique-Width”, *International Journal of Foundations of Computer Science*, accepted.
- Andreas Brandstädt, Feodor F. Dragan, Hoang-Oanh Le, Raffaele Mosca, “New Graph Classes of Bounded Clique-Width”, *Theory of Computing Systems*, accepted.

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Hoàng-Oanh Lê