

CR networks are being developed to solve current wireless network problems resulting from the limited available spectrum and the inefficiency in the spectrum usage by exploiting the existing wireless spectrum opportunistically. CR networks, equipped with the intrinsic capabilities of the cognitive radio, will provide an ultimate spectrum-aware communication paradigm in wireless communications. In this paper, specific challenges for spectrum sharing in CR networks are presented and overview the existing solutions and discuss open research areas. we classify the spectrum sharing techniques and describe the fundamental results about these techniques in CR networks.. Accordingly, we overview the solutions for spectrum sharing among multiple coexisting CR networks (inter-network spectrum sharing), and inside an CR network (intra-network spectrum sharing), respectively. Finally, the open research issues for spectrum sharing in CR networks are discussed.